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"A MIXTURE NOT TO BE REPEATED."[1]

By SIR WILLIAM UPJOHN,
Victoria.

FIFTY-THREE years ago the Master of Surgery degree was, as it is now, a very highly prized academic distinction, and years might pass without a candidate being considered worthy of attaining it.

In my first year as a medical student—1905—I attended, as was then the privilege of all students, at the annual commencement ceremony in the original Wilson Hall. There was then room for all, and I had a seat with other students, on the dais behind the comparatively small assembly of professors and other distinguished people officiating in the conferring of degrees. That year, the Master of Surgery degree was conferred, amidst loud applause, on a good-looking, dark-haired, alert young man, who stood alone on the dais. This was my first, though distant, acquaintance with Harry Stephens, whom I was to know so well, and to appreciate so highly, in later years, as a colleague and a friend.

He was the first member of the Children's Hospital staff to achieve this academic distinction, and no other member of the staff was similarly distinguished till Rupert Downes received the degree about seven years later. Among medical graduates who had graduated just before or just after Harry Stephens, were his close friends A. Rowden White, B. T. Zwar, L. Latham, T. Dunhill and Julian Smith—a group of men who have contributed greatly to the progress and honour of our profession.

Harry's brother, Carl, was a schoolfellow of mine, one year senior, and as a registrar was very helpful to me and others of my year, when we commenced as resident medical officers at the old Melbourne Hospital in 1910. The two brothers, as also the third brother Lytt Stephens, a dentist, were noted for their fund of new and amusing stories. Carl was particularly entertaining because of the infectious splutter of laughter that accompanied the climax of his tale. Harry's sense of humour must have been a great asset to him throughout the stresses of his busy life.

In 1911, when I was appointed a resident medical officer to the Children's Hospital (neither the Melbourne nor the Children's was then Royal), I made my first personal acquaintaince with Harry. I had thought of him as a Master of Surgery, and was at first bewildered to find him doing the post-mortem examinations of the hospital, and also conducting an out-patient clinic, in which medical cases predominated over surgical. Such a mixture I soon found was characteristic of the hospital practice at that time.

I think there were then only two honoraries who were not appointed as combined physician and surgeon. One was Charles Ryan, whom I already knew as my colourful honorary senior surgeon at the Melbourne Hospital, and the other was Richard Stawell, the intellectual, cultured physician, revered by generations of students, and held

[1] Delivered at the H. Douglas Stephens Memorial Meeting of the Pædiatric Society of Victoria, held at the Royal Children's Hospital, Melbourne, on June 11, 1958.

in the highest regard by the profession and the public. In retrospect, I think he was the finest physician Australia has yet produced, and a great public-spirited citizen.

The Victorian medical profession at that time, and for a generation more, was fortunate in being known to the public by two representative men of such high ethical repute as Stawell and Syme. They were splendid exemplars for younger graduates. One can hardly imagine a greater contrast than Ryan and Stawell. Both were popular with students, but for different reasons.

Ryan had been a military surgeon in the Russo-Turkish war, and was known to an older generation as "Plevna" Ryan. He always affected a swaggering military air, and loved to turn up at a ward round in the gorgeous military uniform and plumed cocked hat worn by senior military officers in those days; he talked at the top of his voice, told stories of astounding happenings, often reflecting greatly to his credit as a bold and successful surgeon. The students loved him for his vanity, which amused everyone and harmed no one. He was a capable surgeon of the older type, where rapid, bold and bloody procedures were popularly expected of a noted surgeon. It was a fearful sight to see him tackle an intussusception in a baby. The operation resembled somewhat the gutting of a rabbit in its swift and complete exposure of the abdominal viscera. The sewing up was done rapidly with silver wire through-and-through sutures. I could not imagine him doing any tedious fine operative procedure.

Stawell, on the other hand, was precise, gentle and painstaking in the examination of his young patients and in his instruction of students; he was enthusiastic in the best sense of the word, and infected his students with a similar enthusiasm of interest in seeking clinical truth, and in doing the best for the patient. Self interest or display was never countenanced by him. One time, when I was a student, Charlie came into a ward where Stawell was conducting a class. The visit was meant to be a consultation, but before long it had become, in his rather loud, parade-ground voice, a narration about some of his own remarkable exploits and experiences. The students grinned appreciatively while Stawell preserved a respectful silence. Finally Charlie finished and strutted out of the ward. Then Stawell turned to his students, saying with a straight face and in his most earnest manner: "Isn't he great? Isn't he wonderful? But come, let us now get back to facts." Stawell left the Children's Hospital, to the regret of all his colleagues and juniors, when he was appointed an indoor physician at the Melbourne Hospital.

Such a contrasted mixture of types on the indoor staff was not to be repeated in my time. I think all the other honorary consultants were both surgeons and physicians, and some not only had beds in the wards, but also had out-patient mixed clinics. Some of them did very little medicine, others very little surgery, e.g., Jeffreys Wood and Hobill Cole. I do not think there were any special departments, though Percy Webster, a genial humorist and an excellent specialist, used to come to the hospital when required for ophthalmology. He was deaf, more so when it was convenient for him not to hear. His peculiar hushed voice added to the droll effect of his stories.

Kent Hughes delegated his medical work to some physician assistants, and was always available for specialist ear, nose and throat surgery. He combined this specialty with another—the treatment of foot deformities. As he used to say, he specialized in the two ends of the baby—a queer mixture not likely to be repeated. He was the father of orthopædic surgery here, and the book he wrote with Waltham is well worth study. The operation known now as the Steindler operation for pes cavus was described in this book long before Steindler's time. Kent Hughes himself was an interesting mixture: he was kind-hearted and generous, yet delighted in picking a fight for the sheer fun of it; a profound believer in what was proper in religious observance, yet capable of the most startling irreverent witticisms; a thorn in the flesh to those he considered humbugs or pompous, but a courageous champion of anyone who had earned his respect. There was never a dull moment when he was about, and I doubt whether anyone on a hospital staff today could show such a mixture of character and accomplishments. I have often seen him tease Harry and try to get him riled, but Harry could not be provoked to a quarrel. He generally got out of it by some good-humoured joke, producing a laugh in which Kent Hughes would join. Kent Hughes merits a memorial address in himself.

Another unusual ingredient of this mixture of honoraries, and in himself a bewildering mixture, was Peter Bennie. He seems always to have been an old man, for if you see his portrait in the early student groups at the medical school, he is there looking like a grave elderly philosopher, clad in the double-breasted frock coat, which, with a top hat and a faded, badly-rolled umbrella, was his habitual garb till the end of his career. He was a mixture of practical ability and unworldliness, of great intellectual attainment and childish simplicity, of noble countenance and actions bordering on the ridiculous. He taught the principles of plastic operations on the cleft lip and palate, and though very short-sighted and slow in his movements, he obtained beautiful results. Harry acknowledged his debt to him in this and in his other great contribution to surgery—the correct design, fitting and use of the Thomas splint. Made and used as taught by him, it was a beautiful instrument for treatment of the tuberculous hip and spine. The diminishing incidence and severity of joint tuberculosis, and the coming of a later generation of young surgeons who were experienced only in the plaster technique, led to the decline of the knowledge of its use as Bennie taught us.

Peter also had an uncanny ability to recognize the protean manifestations of inherited syphilis when it was associated with other disorders not manifestly syphilitic. These mixtures are rarely seen now, but Peter taught us to suspect it where it was not obvious, and so often his advice to use *Hydrargyrum cum Creta*, or "peer" chloride of mercury as he called it, and *Potassii Iodidum* for doubtful medical or surgical cases achieved success.

He had a habit of turning up about lunch time—never a welcome time for residents. The nurses used to know about our plight, and not infrequently one would run up panting to say, "Dr. So-and-So, you are wanted on the telephone". If Dr. So-and-So was wise, he would rush off to some hide out, calling out an apology to Peter over his shoulder. If Dr. So-and-So was not quick as well as wise, Peter would follow at a sharp walk and carry on the monologue at the next stopping place. This caused the evolution of another escape technique. Most of the laundry was then done by hand at the hospital, and was hung out on long clothes lines between what was then the out-patients' department and the wards. If the resident was "stuck" with Peter, he would ask him to see a patient in some other part of the hospital, which would mean crossing the laundry display. If, on reaching the washing lines, the resident was careful to run in and out of the parallel lines of flapping sheets and what-nots, poor old Peter in his myopic spectacles could be well and truly entangled in the washing and be lost for the day.

He was a Latin scholar and a mathematician. He and a German visitor used to converse in Latin, and had some strange ways of referring to ordinary objects: a tobacco pipe was spoken of as a fistula, and a steam railway train as a "*vehiculum tractum a vapore*". He loved demonstrating the application of mathematics to various things. With his old badly-rolled umbrella he would demonstrate the mathematics of billiard shots or strokes in cricket, or would discuss the mathematics of a harelip operation and, most remarkable, the mathematics of the waltz. It was an astonishing sight to see this elderly, bearded man in a faded top hat holding out the flaps of his ancient frock coat while he gravely executed certain movements, which in their geometric resultants became transformed into the steps of the waltz. Not infrequently he would do this on the footpath outside the gate of the hospital, to the great glee of the school urchins from the nearby school, and to the embarrassment of the immobilized resident medical officer.

Poor old Peter, he was always poor; he had a poor lodge practice, and walked everywhere on his professional visits till he got some form of nutritional rheumatism in his old age. In the days before vitamins had become popular, he worked out a diet of some oddly mixed foods and cured himself. Later examination has shown that this was a vitamin rich diet, though vitamins were not talked about much in those days. Everyone was fond of him and admired his intellect, and pitied his worldly failure. You will never see again on the visiting staff a man of such a strange mixture of complex intellect and over-simple behaviour.

I cannot leave these brief references to the members of the honorary staff who were Harry's seniors, without saying a few words about the two men who brought so much distinction to pædiatrics in Melbourne, and whose memory is revered and perpetuated at the hospital to this day. I speak of Jeffreys Wood and Frank Hobill Cole. They had been friends since they were resident medical officers in the early days of the Children's Hospital. Jeff Wood had a tremendous clinical experience and a wonderful way with children. His fame as a children's specialist was national. He confined himself to pædiatrics, almost entirely to the medical side. He was a most likeable man, and always ready to help and encourage his juniors. Harry acknowledged how much he had learned from Jeff.

Frank Cole did not confine himself to children's work till later in his life, and at the hospital he was, in my time, the senior surgeon. Snowball, the father of pædiatrics here, had a high regard for him as a young man, and encouraged him to follow him as a pædiatrician. I have never met a more charitably minded man or a practitioner more gifted with common sense. Equanimity and magnanimity were outstanding features of his character. I had the good fortune to live in his household and succeed Harry as his part-time assistant after Harry had married his charming young daughter. I left when war broke out, full of admiration for his character and respect for his knowledge.

> His life was gentle, and the elements
> So mix'd in him that Nature might stand up,
> And say to all the world "This was a man!"

I have made some remarks about the mixed medical and surgical clinics and the mixed responsibilities of the members of the honorary medical staff in their attendance on in-patients and out-patients. There were no special departments. X rays were just coming into use in surgery, and the only person with an interest in radiography was Dr. Hewlett, whose appointment was out-patient physician and surgeon. Harry, in his early days, was Hewlett's out-patients' assistant. There was a small X-ray machine in a basement, which he used when specially requested to make an X-ray examination. There were no celluloid films, the emulsion was on glass plates, and the efficiency of the X-ray apparatus was judged by one's holding up a hand between the tube and the screen to see the definition of the bones of the hand. It is a wonder that accidents did not occur. I cannot remember any affected patients, but the early workers, including Hewlett, all showed on their hands and faces the results of these early exposures.

The earliest effort, I saw, at accurate localization of a foreign body in skiagrams was when Hewlett brought over his Christmas pudding to localize the lucky threepence in it, so that he could make sure of incising it in the right place so that his little daughter could get it in her helping on Christmas Day.

The only instance I can remember, as a resident, of a successful resection of an intussusception was one where Hewlett was the surgeon acting in an emergency. He was so surprised and delighted with his success that he treated us four residents to a champagne dinner. Soon after this he became a specialist in X-ray diagnosis, but, to the end of his days, he usually included in his report on the films a few kindly meant, though not always acceptable, hints on treatment.

Do you think you will ever again see this mixture in one individual of radiologist, surgeon and celebrating host? I think there was still the office of medical electrician. He had been employed in galvanizing the muscles of early infantile paralysis patients with, of course, no benefit, and the practice was about given up when I became a resident, but the memory of the office had persisted, and out of it emerged a massage department. I think Alan Mackay was one of the last to do the electrical work on poliomyelitis patients. I know I have heard his amused comments on his well-intentioned and thoroughly ineffective electrical treatment, but in my time he was engaged mainly on in-patient surgery.

Speaking of my resident days reminds me of the mixed nature of our living conditions. We worked by day in the surgical wards of what had been Sir Redmond Barry's mansion. He was the first Chancellor of our university and Chief Justice of Victoria, etc. He himself was a mixture, not uncommon in the Victorian era, of publicly ostentatious respectability and private laxity. We slept in what had been his coachhouse or some similar building, took our meals in another converted building, and had our morning bath in a very large bath with mahogany panelling in a very dark bathroom in the old mansion. We shared this opulent bath with the matron. It was strictly rationed to time of use, so that there could be no risk of mixed bathing, and we demurely failed to recognize the presence of each other as we passed in the dimly-lit passageway.

So far I have given some consideration to the mixture of personalities and conditions of hospital life and practice in the days when I first came to know Harry Stephens personally. It may now be appropriate to turn to consider the patients and the mixture of their troubles at this period. A list of the maladies which Harry Stephens commonly treated in his hospital practice and in this earlier period, shows them to be a mixture of medical and surgical cases, and a mixture of diseases then very common but now comparatively infrequent.

Inherited syphilis, either occult or in various florid manifestations, tuberculosis of the spine and hip and of the knee and finger joints, extensive tuberculosis of the skin and of the bowels and peritoneum were of frequent occurrence, whereas they are now comparatively uncommon. Another all-too-frequent disease was acute blood-borne osteomyelitis, sometimes fulminating and disastrous, always pathetically disabling. Among his medical cases were patients with acute dysentery, who too often died after a very short illness, and an occasional patient with typhoid, infantile scurvy and other dietetic troubles. All these, though not abolished from pædiatrics, have greatly diminished since the establishment of baby welfare centres and the introduction of penicillin and its succeeding antibiotics.

Another ingredient of the mixture of diseases was diphtheria. Nasal diphtheria existing as a mild infection could be easily overlooked. It became a source of danger or disaster when operations were done such as those for harelip, cleft palate, tonsils or teeth extractions. Such a carrier infection was also a menace to other patients, either in the crowded out-patients' rooms or in the wards. Since the widespread public health campaign for prophylactic inoculation against diphtheria, this menace has been overcome. It may seem strange to you that my seniors, when I became Harry's clinical assistant, used to relate with horror their recollection of the anguish of parents and physicians who could do nothing effective while the little victims of diphtheria slowly suffocated, sometimes whole families being obliterated one by one. This was in the dark days before antidiphtheritic serum came into use.

Perhaps I have said enough to indicate how mixed were the personalities of these honoraries, how mixed were their hospital responsibilities and how mixed were the maladies they were called upon to treat. You have your mixtures at the present time, but they are of different sorts from these old-time mixtures, which will not again be repeated.

In his later days at the hospital, Harry Stephens was known as its senior surgeon, but when I knew him first he exemplified in himself the greatest mixture of

accomplishments of any member of the staff. His out-patient clinic was ever the scene of bustling activity. He would see a succession of medical patients then be called by Sister Thomas to go across to the operating room and do some operations such as those for tonsils and adenoids, hernias, talipes or harelip, then back to some more medical or surgical cases till the next batch of operations was ready. Not uncommonly this work was preceded in the early morning by post-mortem examinations in the ill-equipped mortuary. There was no pathological department or specialist at the hospital. Harry did the gross morbid anatomy, but bacteriological and microscopic pathological examinations were done at the university.

I cannot remember any other hospital where the post-mortem examinations were carried out by one of its surgical staff, though the late Dr. C. H. Mollison, for so many years pathologist to the Melbourne and Women's Hospitals, always designated himself as a surgeon. However, he never operated on living people.

Lord Moynihan described himself as a physician who operated, and this description applied well to Harry. His clinical examination was thorough, and his knowledge of children's diseases was tremendous. His services as a children's physician were always highly valued in the hospital and in private practice by outside practitioners.

At this time he did a little adult medicine. It was confined to evening and week-end work at Dr. Frank Cole's practice in Carlton, and to examining invalid pensioners as a Commonwealth medical referee. He also had, of course, his own practice as a children's specialist. Even these responsibilities did not exhaust his energy. He was a medical officer to the Foundling Home, and was called in from time to time to advise and treat children in the infectious diseases hospital at Fairfield. He was also a regular demonstrator for some years in the anatomy school at the university, and as you all know he was year after year the secretary, chief exhibitor, inspirer and sustainer of the Pædiatric Society. Everyone agreed that he was at his best in the lively presentation of clinical cases at a Pædiatric Society meeting. At the same time, he was on the council of the Victorian Branch of the British Medical Association, where he held the office of librarian. Much later he was President of the Branch. Amidst all these activities, he was full of fun and good fellowship; he was kindly, cheerful and friendly, and engendered friendly feelings towards him from those who were fortunate to know him. He diffused energy, interest and good humour around him while he worked and talked.

The process of specialization of functions in the members of the medical staff is still going on, but I think I am not likely to be wrong when I make the prediction that the mixture of such diverse responsibilities, such rich qualities, and such high attainments will not in the future be repeated in any one individual.

FRANK HOBILL COLE: A PÆDIATRIC PROFILE.[1]

By Howard Boyd Graham,
Melbourne.

This is the sum of things—that we
A lifetime live greatheartedly,
See the whole best that life has meant,
Do out our work, and go content.

—Arthur Wilberforce Jose.

Arthur Wilberforce Jose, the author of these lines, was well known in Sydney and, indeed, throughout the English-speaking literary world. He and Frank Hobill Cole had at least two things in common: they were both born in 1863, and they both died in 1934. The lines are so apposite that Jose must have had someone very like Dr. Cole in mind when he composed them.

[1]Read at the H. Douglas Stephens Memorial Meeting of the Pædiatric Society of Victoria, held at the Royal Children's Hospital, Melbourne, on June 11, 1958.

It is appropriate on this occasion, the annual H. D. Stephens Memorial meeting of the Pædiatric Society of Victoria, that we should open the proceedings with a brief profile of Dr. Cole, who was not only the father-in-law of Dr. Stephens, but also the senior colleague who had always helped and inspired him. Moreover, Dr. Cole was one of the founders of our Society, made many notable contributions at the earlier meetings, and served on the hospital staff, off and on, for 47 years. When pædiatricians were few in number even in Melbourne, Frank Cole was the favoured junior of the great William Snowball (Figure I) who, starting from scratch, gave our hospital world rank in his own time and trained such giants as Peter Bennie, Richard Stawell, Arthur Jeffreys Wood and Frank Hobill Cole (Figure II).

Service to Scotch College.

Born in Melbourne in 1863, Frank Cole was educated at Scotch College under Alexander Morrison, and remained closely attached thereafter to "the best school of all". He became a member of the council in due course, and he took a notable part in the transference of the school from East Melbourne to its present noble site at Hawthorn Glen alongside Gardiner's Creek, on ground hallowed as the settling place of the first overlanders from Sydney to Melbourne. For a great many years, Dr. Cole was the school medical officer at Scotch College; in the later years he was assisted by Dr. Euan Littlejohn, who became his successor and still occupies the position. Dr. Cole, in characteristic manner, established systematic records of annual physical examinations of the schoolboys, scrutiny of which has served more than once to provide scientific facts about their growth and development.

The Complete Pædiatrician.

Dr. Cole's long association with the Royal Children's Hospital, Melbourne, commenced with his appointment as resident medical officer in 1887. At that time the hospital had only one resident medical officer, and during the year Dr. Jeffreys Wood had occupied the post; but it was decided that a second one was needed, and Cole joined Wood. When his days as a resident doctor were over, Frank Cole established himself in general practice at 88 Rathdown Street, Carlton, and lived there for the rest of his life. From 1893 to 1920 he was a prominent and active member of the honorary staff of the hospital, but he was an honorary consulting surgeon from 1920 until his death at the end of 1934.

My own assocation with him as an active staff member was only for a brief period in 1920, but after his retirement from the active staff, he often visited the hospital, and he attended regularly at meetings of the Pædiatric Society of Victoria. His private practice was situated not very far from the hospital, and the district became an inner industrial area with many low-wage earners and poor people in it. When it was necessary to put a patient in hospital, Dr. Cole often used our hospital for his children. It was his habit to send an economically worded note to us at the hospital with each patient; and what he wrote could seldom be faulted. "So-and-so has pneumonia and should be in hospital." "So-and-so is febrile and is exhausted with diarrhœa." "So-and-so has had intussusception for five hours." At the receiving end, we knew that Dr. Cole would arrive in the ward within a few hours to see the resident medical officer; then he would give us a full account of what he knew of the case, and he would ascertain precisely what we were going to do for the patient. I can clearly remember several of these occasions. Once he sent in a two-year-old with pneumonia, and the diagnosis was beyond dispute, but, by the time he appeared at the hospital, we had operated for acute appendicitis. He was very distressed at having missed the surgical diagnosis, but was very pleased that his omission was covered by our promptitude. His words of wisdom linger in the memory: "The most dangerous place to have an acute abdomen is in the medical ward of a hospital." We lost a small child with pneumonia, and Dr. Cole suspected some undiagnosed complication; he pressed for an autopsy examination, and was present when Dr. Webster demonstrated to us

the additional presence of pneumococcal peritonitis. Dr. Webster will remember a small boy, who had progressive signs of a bilateral transverse lesion of the lumbar spine, the cause of which was baffling. Dr. Cole kept in close touch with us during the investigations and, at operation, Mr. Littlejohn exposed by laminectomy two nests of small hydatid cysts. Dr. Cole's reaction was memorable: "I have always been teaching doctors to remember hydatid cysts in these difficult cases, but I am ashamed to say that I did not even think of them myself this time."

Dr. Cole earned a wide reputation as a highly trained and very skilled physician and surgeon, with a particular

FIGURE I.
William Snowball (*circa* 1851-1902).

interest in diseases of childhood. When, in 1914, it was decided to separate surgery and medicine at the Children's Hospital, it was agreed that Dr. Wood and Dr. Cole should continue in the dual capacity to which they had become accustomed. In 1926, the new wards for babies were named for them.

Materia Medica and Pharmacy.

For 21 years Dr. Cole was the lecturer and examiner in materia medica and pharmacy in the medical course at the University of Melbourne, and as a member of the Faculty took a great interest in the moulding of the curriculum.

He waited until 1904 before he acquired the senior degree of doctor of medicine. Rumour has it that he got it then only because of the importunity of his colleagues, who considered that he was the most competent physician in Melbourne without it. His attitude was that he did not need it—or miss it—and could not spare the time to prepare himself for examination. In after years, he told me that it was more profitable for a doctor to fail in the primary senior surgical examination than to pass the senior medical examination, for no one could take from the candidate the benefit of renewed study of anatomy and physiology involved in the preparation for the surgical examination. At that time in our university it was notoriously difficult to satisfy the examiners in surgery.

I had the good fortune to be a student of materia medica and pharmacy under Dr. Cole. His lectures were a literary treat as well as a scientific triumph. He lightened them with stock jokes, and he anticipated the student reaction whimsically. One I can recall was intended to impress the fact that calomel as an aperient acts by virtue of its insolubility. He put it thus: "The dosage of calomel is four grains for a woman, three grains for a man, and two grains for—a dog." Years later, in Flanders' fields, an incident occurred which reminded me of this joke. Our interpreter, a Zouave who had been a marine biologist in South Africa, got a chit from me for the dispenser to supply him with some calomel. Next day, he asked me why the tablets were made so small. It transpired that he had tipped the hundred from the bottle into the palm of his hand and had swallowed the

FIGURE II.
Frank Hobill Cole (1863-1934).

lot. He went on to say that the resultant single evacuation had given him great satisfaction.

The present generation of doctors may need to be reminded that in my student days the armamentarium of a physician contained galenicals and plant extracts chiefly; thyroid extract given by mouth was the only effective hormone; horse serum was the common serum, though antitoxic serum was available for diphtheria and for tetanus; and vaccination could only mean smallpox prophylaxis. Just before my time, except for the privileged few who practised in the larger centres, doctors expected to have to make their own pills and ointments and to dis-

pense their own medicines. It was Dr. Cole's duty to tell the students how this practical part of our professional drudgery was to be done safely, accurately and elegantly. Indeed, they had to learn how to prepare the plant extracts from the original sources. Fortunately for me and my successors, the pharmacists took over this onerous responsibility; and, fortunately for them, nowadays the drug houses and manufacturers have developed their scope to the point at which dispensing may well be a vanishing art. Drugs extracted from plants, synthetics, hormone preparations, sera, vaccines, antibiotics and the like arrive ready for use from the manufacturers in bewildering profusion and disguised under a brain-stunning galaxy of trade names. In Dr. Cole's day, the subject called materia medica and pharmacy was an important content of the curriculum, and examinations were written, oral and practical.

Apprenticeship Under Dr. Cole.

Dr. Cole was so busy in the practice at Rathdown Street that he employed part-time assistants who lived at the house, helped him with his work and pursued post-graduate study of their choice. The assistantship was highly prized, and some assistants stayed as long as three years; they valued the post as an apprenticeship of the first order of excellence. It seems to us that Dr. Cole was a fine judge of the potentials of the people he selected. It is not possible to assess the extent to which credit should go to Dr. Cole rather than to the incumbent, but it is a fact that, in rapid succession, the holders of this assistantship became distinguished leaders of the profession. Many of them were highly placed in the British Medical Association and at the hospitals, and I know of at least five of them who have been presidents of the Pædiatric Society of Victoria: starting with H. D. Stephens himself, who collected the boss's daughter, I can also name Sir William Upjohn, Dr. Reginald Webster, Sir Frank Kingsley Norris and Dr. Alan McCutcheon. At the expiration of his term, Dr. McCutcheon forgot to go—and he is still there. He would be the first to agree that even he could not hope to lift the ethical standard or the high reputation of the practice higher than they were when he joined Dr. Cole.

Collector and Connoisseur.

Dr. Cole was celebrated as an art connoisseur and patron of rising artists. He assembled a very fine collection of paintings, etchings and books. He was a leading authority on Australiana, and his library contained many rare and valuable first editions and other desirable items, which reflected his intellectual interests and uncommonly sound judgement. I remember the privilege of viewing it all with him, and I recall an incident of the first visit which illustrates his shrewdness. Seated in his consulting room alongside him, my long legs were embarrassingly awkward on rising from a low chair. He pointed out to me that it was a psychological advantage for the doctor to sit higher than the patient he was interviewing, hence the low chair for the victim. I did not forget that little lesson in the art of medicine.

Unfortunately, late in life, he found it necessary to disperse his collection of books, but fortunately for me, I was able to obtain some of them, which I still treasure. I shall mention only one of them. Grace Jennings Carmichael, the Victorian poetess, was in the first group of graduates of the nursing school at our hospital. Apart from her volume of poems, she published, in 1891, "Hospital Children, Sketches of Life and Character in the Children's Hospital, Melbourne". I have the copy which was Dr. Cole's. In it we have an inimitable account of the life of the hospital as Dr. Cole first knew it.

His Nature and Character.

Frank Hobill Cole had fine qualities of head and heart. A skilled pædiatrician, he reflected honour on our profession. He had a profound knowledge of medicine and of drugs, and conducted a wonderful private and consultative practice. He was a pleasant and attractive companion and colleague, charming and courteous and very lovable. He was amiable, wise, able and unostentatious. He was genuine in sympathy, a man of deep sincerity and rectitude, who was very kind, helpful and generous. He was cultured, dignified, artistic and refined. He rendered wholehearted service, and was calm and steadfast in the pursuit of knowledge. His deep sincerity, unvarying courtesy and steadfastness never failed to impress, and gave people confidence in him and they gave him their lasting affection.

These are not only my own ideas of Dr. Cole's nature and character; they are based on the epithets, opinions and sentiments of those intimate friends who composed the obituary notice in our Journal. He retired before his time from active duty at the hospital, and from then submitted with grace and fortitude to the progressive crippling effects of Parkinson's disease. His calm nobility under this grievous affliction elicited many demonstrations of the affection and admiration felt for him by his friends and colleagues. His nature and character are an integral part of the "spirit of the place", in which we in our turn have had the opportunity to serve the children who have needed our aid and skill.

MORTALITY IN AUSTRALIA, 1951 TO 1955.

By H. O. Lancaster,
School of Public Health and Tropical Medicine, Sydney.

Another five-year period has been completed with the publication of the seventy-third number of *Demography*, the annual bulletin of the Bureau of Census and Statistics, Canberra. A census of Australia was held in 1954 and in accordance with recent practice a life table based on the mortality experience of the years 1953 to 1955 will shortly be published by the Government Actuary. Some brief remarks have already been made on this experience in *Health* (Lancaster, 1957*b*); but it seems desirable to give a more detailed discussion than was practicable in that review in order to bring my survey up to date. I shall therefore now review the mortality in Australia for the five years 1951 to 1955.

Table I.

Years of Life Experienced in Australia for the Years 1946 to 1950 and 1951 to 1955.

Age. (Years.)	1946 to 1950.[1]		1951 to 1955.[1]	
	Males.	Females.	Males.	Females.
0	466,673[2]	444,918[2]	516,286[2]	490,830[2]
1 to 4	1,576,962	1,510,371	1,939,050	1,854,544
0 to 4	2,043,272	1,954,470	2,441,645	2,334,677
5 to 9	1,616,276	1,556,999	2,172,703	2,078,227
10 to 14	1,399,888	1,353,130	1,700,276	1,632,907
5 to 14	3,016,164	2,910,129	3,872,979	3,711,134
15 to 19	1,460,749	1,412,506	1,484,628	1,414,467
20 to 24	1,581,479	1,546,726	1,608,338	1,484,087
15 to 24	3,042,228	2,959,232	3,092,966	2,898,554
25 to 34	3,064,541	3,055,509	3,602,053	3,353,157
35 to 44	2,810,897	2,663,701	3,220,803	3,069,497
45 to 54	2,258,023	2,246,216	2,577,309	2,415,124
55 to 64	1,812,843	1,858,370	1,878,078	2,013,711
65 to 74	998,592	1,125,433	1,158,733	1,337,149
75 and over	447,586	568,215	469,947	649,099
All ages	19,494,146	19,341,275	22,314,513	21,782,102

[1] The years of life experienced by persons while they were in the age group indicated.
[2] Births.

The Mortality from All Causes.

For calculation of the death rates it is essential to have a knowledge of the years of life experienced in each age group. These are given in Table I for both the periods 1946 to 1950 and 1951 to 1955. The method of obtaining these has been previously explained (Lancaster, 1951). In brief, the years of life experienced in a given age group can be taken as the sum of the mid-year populations for

each year—e.g., the numbers of males aged 20 to 24 years at June 30 for each of the years 1951 to 1955. The 1946 to 1950 figures have also been given so as to yield

TABLE II.

Mortality in Australia for the Years 1946 to 1950 and 1951 to 1955.

Age (Years).	Deaths per Million per *Annum*.			
	1946 to 1950.		1951 to 1955.	
	Males.	Females.	Males.	Females.
0	30,085[1]	23,697[1]	25,988[1]	20,555[1]
1 to 4 ..	1,979	1,583	1,743	1,439
0 to 4 ..	8,398	6,581	6,879	5,464
5 to 9 ..	889	619	703	521
10 to 14 ..	755	508	655	410
5 to 14 ..	827	567	682	472
15 to 19 ..	1,384	602	1,546	590
20 to 24 ..	1,803	1,007	1,981	723
15 to 24 ..	1,602	857	1,746	658
25 to 34 ..	1,833	1,458	1,777	1,069
35 to 44 ..	3,309	2,684	3,096	2,217
45 to 54 ..	8,780	6,036	8,222	5,361
55 to 64 ..	22,114	13,095	22,349	12,305
65 to 74 ..	50,859	33,473	51,213	31,515
75 and over ..	134,924	111,843	138,067	111,139
All ages	10,804	8,675	10,245	8,209

[1] The infantile mortality rate.

an unbroken series, 1908 to 1955, when combined with the tables of the previous paper. The years of life experienced are set out in Table I. Similar additions have been made for the deaths in the two periods, and then the death rates of Table II have been computed. It should be noted that the death rates given for age 0, the infantile mortality rates, have been computed by dividing infantile deaths by the corresponding births.

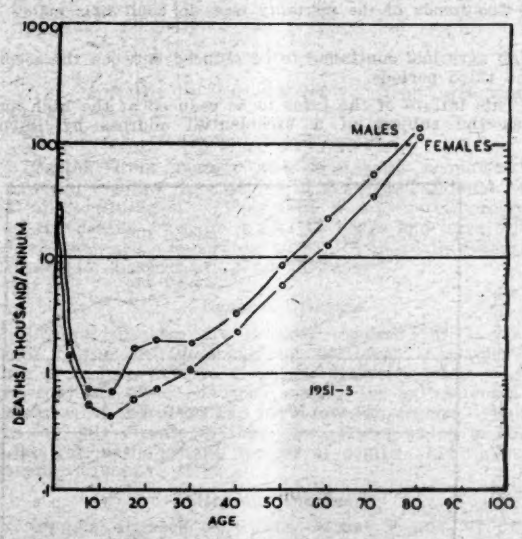

FIGURE I.

The death rates by age and sex in Australia, 1951 to 1955.

Fixing attention on the rates for 1951 to 1955 in Table II and in Figure I, we notice that the rates are high in the first year of life; they then decline to a minimum in the age group 10 to 14 years in both sexes—655 per million *per annum* for males and 410 for females, that is approximately 0·5 per thousand *per annum* for either sex. The death rates of the females then rise steadily throughout life. The death rates of the males rise to a relative maximum at ages 20 to 24 years, decline slightly in the next age group and then increase steadily throughout the rest of life. This relative maximum is due entirely to accidents and has been discussed in Lancaster (1957*a*).

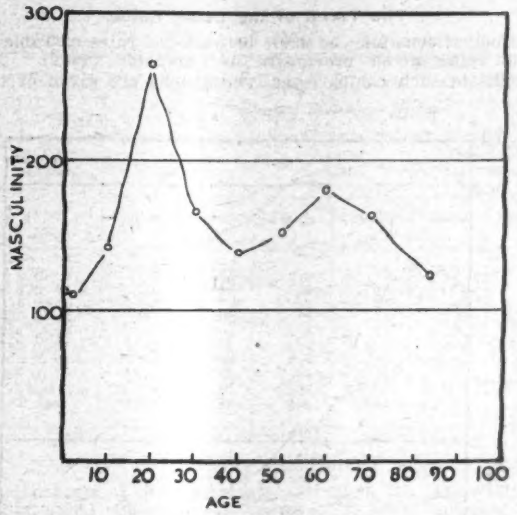

FIGURE II.

The masculinity of the death rates in Australia.

There are considerable differences between the mortality rates of the two sexes at practically every age. This difference is conveniently measured by the masculinity,

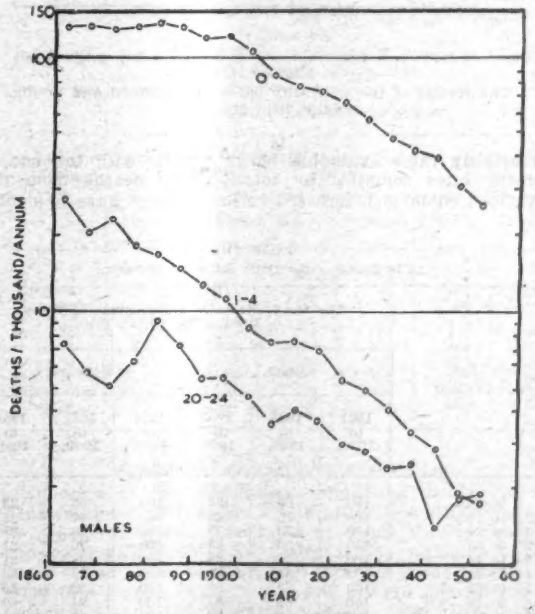

FIGURE IIIA.

The trends of the mortality rates in childhood and young adult life: males.

defined as 100 times the male rate divided by the corresponding female rate. The masculinity is 126 in the first year of life and 121 at ages 1 to 4 years, and then

rises to the very high levels of 262 and 267 at ages 15 to 19 and 20 to 24 years. This may be studied in Figure II, and a more detailed analysis by cause is given in a later paragraph.

The Trend of the Death Rates.

Comparisons may be made between the rates of Table II and those given previously in Lancaster (1951). To facilitate such comparisons, two graphs are given of the

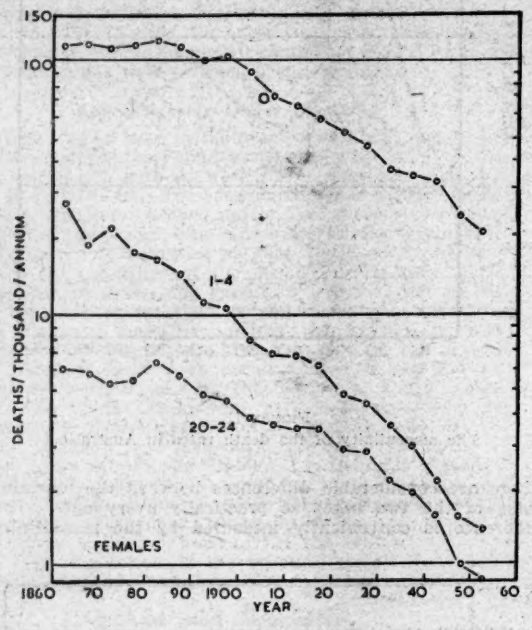

Figure IIIb.
The trends of the mortality rates in childhood and young adult life: females.

mortality rates extending back to 1861, with the use of death rates compiled by totalling the deaths from the various colonies before federation. There have evidently

Table III.
The Trend of the Death Rates in Australia.

Age. (Years.)	The Death Rates as a Percentage of Those Holding in 1901 to 1910.					
	Males.			Females.		
	1901 to 1910.	1921 to 1930.	1951 to 1955.	1901 to 1910.	1921 to 1930.	1951 to 1955.
0 to 4 ..	100	63	25	100	60	23
5 to 14 ..	100	75	33	100	67	25
15 to 24 ..	100	70	49	100	68	21
25 to 34 ..	100	69	35	100	70	21
35 to 44 ..	100	70	38	100	68	31
45 to 54 ..	100	81	61	100	82	56
55 to 64 ..	100	89	88	100	83	66
65 to 74 ..	100	83	87	100	81	69
75 and over ..	100	90	92	100	94	89

been great reductions in the mortality rates at all ages when the most recent period is compared with the earlier.

Two exceptions may be noted to this general downward trend: first, there has been a recent increase in the death rates in young adult life, due largely to an increase in deaths from violent and accidental causes; second, there has been only a small reduction in the mortality of males at ages above 55 years. This is brought out in Table III, where I have taken all the rates for either sex in 1901 to 1910 as the standard, 100, and expressed the rates in 1921 to 1930 as a percentage of them. Now it is evident that there had been substantial reductions at all ages between the first two periods, but between the second and third periods there had not been a reduction for males aged over 55 years — indeed, the rates had actually increased. On the other hand, the mortality rates of females at these

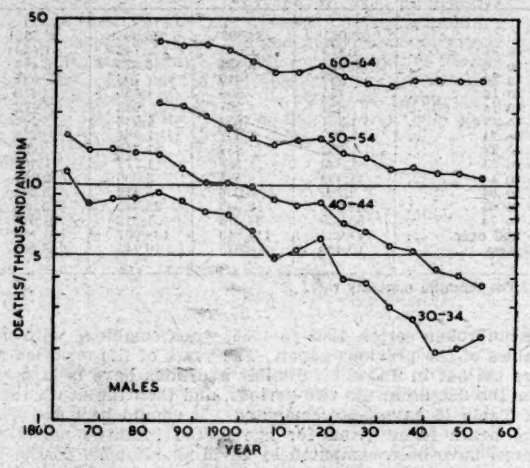

Figure IVa.
The trends of the mortality rates in adult life: males.

high ages had continued to be reduced between the second and third periods.

This failure of the rates to be reduced at the high ages was the subject of a presidential address by Burnet

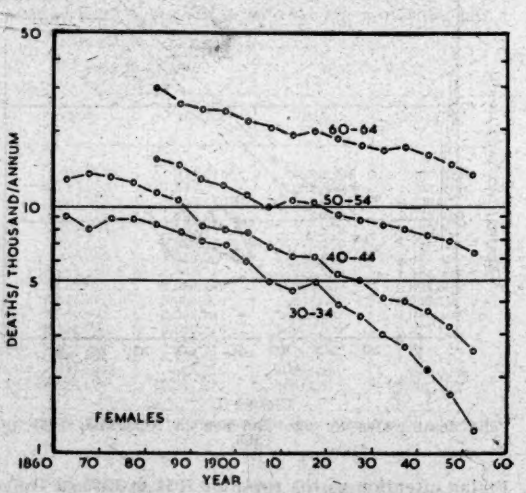

Figure IVb.
The trends of the mortality rates in adult life: females.

(1957), who mentions especially the vascular degenerations and cancer of the lung. Peptic ulceration may now be added as a third contributory cause of this deterioration in the mortality rates of males at the high ages.

The Mortality from Infections.

In Table IV are given the death rates from the infections in Class I of the "International Statistical Classification of Causes of Death", divided up into death rates from tuberculosis, from all forms of syphilis and from other infections in Class I. The death rates from tuberculosis are low at all ages for females, and also for males except at ages over, say, 45 years. It is fair to interpret the rates in Table IV as indicating that it is only in the cohorts, exposed to heavy infections in youth, that tuberculosis is still a problem. The higher rates in elderly males may also be partly due to occupational factors. Similarly, syphilis is a small cause of mortality except in males over the age of 45 years. Once again, these deaths, as for example from tabes, aneurysm and general paresis, are the residue of long-standing infections. All other infections in Class I of the "International Statistical Classification" have been grouped together as "other infections" in Table IV, and it is to be noted that they cause relatively few deaths except at the extremes of life.

TABLE IV.

The Mortality from the Infectious Diseases in Australia, 1951 to 1955.

Age. (Years.)	Deaths per Million *per Annum*.					
	Tuberculosis.		Syphilis.		Other Infections.	
	Males.	Females.	Males.	Females.	Males.	Females.
0 to 4 ..	23	32	5	1	672	560
5 to 14 ..	6	4	1	0	103	84
15 to 24 ..	18	27	1	0	87	63
25 to 34 ..	51	68	2	1	72	61
35 to 44 ..	125	98	8	4	73	49
45 to 54 ..	301	90	42	14	112	103
55 to 64 ..	595	94	135	32	215	149
65 to 74 ..	847	151	205	39	362	241
75 and over ..	847	206	196	79	1128	961
All ages ..	179	66	33	10	199	168

The mortality in the different systems will now be briefly reviewed.

Neoplastic Diseases.

Deaths from benign and malignant neoplasms are grouped together in Class II of the "International Statistical Classification". They form a substantial proportion of the deaths over the age of 65 years and have already been reviewed (Lancaster, 1958). The death rates from neoplastic diseases are given in Table V.

General Diseases.

General diseases are grouped together in Classes III and IV of the "International Statistical Classification", which include allergic disorders, diabetes, diseases of the thyroid and other endocrine glands, the avitaminoses and diseases of the blood and blood-forming organs. Diabetes is the only disease in these two classes which is responsible for an important number of deaths (Lancaster and Maddox, 1958).

Nervous Diseases.

Nervous diseases constitute Classes V and VI of the "International Statistical Classification", of which numbers 330 to 334 — the vascular lesions affecting the central nervous system — are the most important from the mortality point of view. There have been increases in the death rates for males even between the two most recent periods, 1946 to 1950 and 1951 to 1955, whereas the rates for females at these ages have been stationary.

Diseases of the Circulatory System.

The diseases of the cardio-vascular system have always been important causes of death, especially at high ages. In the method of classification followed in this paper they are the most important group. There is some reason for suggesting that the vascular lesions of the nervous system would be more satisfactorily treated in this class rather than among the nervous diseases. In any case, these two groups of causes account for about half the deaths in the population at the present time.

TABLE V.

The Mortality from Neoplastic, Certain General and Nervous Diseases in Australia, 1951 to 1955.

Age. (Years.)	Deaths per Million *per Annum*.					
	Neoplasms.		General Diseases.		Nervous Diseases.	
	Males.	Females.	Males.	Females.	Males.	Females.
0 to 4	125	123	70	72	131	115
5 to 14	82	64	34	42	31	26
15 to 24	111	70	52	50	54	44
25 to 34	171	206	66	74	110	92
35 to 44	420	605	114	153	304	301
45 to 54	1310	1594	250	311	933	1104
55 to 64	3764	3089	545	728	2787	2543
65 to 74	8177	5642	1154	1739	7038	6926
75 and over	16,098	11,160	2506	3376	18,685	21,863
All ages	1364	1288	235	368	1190	1513

Respiratory System.

Diseases of the respiratory system in the "International Statistical Classification" almost entirely comprise the infective diseases, such as lobar pneumonia, bronchopneumonia, bronchitis, pleurisy and the like, together with pneumonokoniosis (non-tuberculous) and asthma. Comparing the rates in Table VI with the tables of Lancaster (1953), we find that the rates have been greatly reduced for females at all ages and for males aged under 55 years; but above 55 years the reductions since 1945 have been slight. This difference is reflected in the masculinity rates given in Table IX.

TABLE VI.

The Mortality from Diseases of the Cardio-Vascular, Respiratory and Alimentary Systems in Australia, 1951 to 1955.

Age. (Years.)	Deaths per Million *per Annum*.					
	Cardio-Vascular System.		Respiratory System.		Alimentary System.	
	Males.	Females.	Males.	Females.	Males.	Females.
0 to 4	34	24	683	589	147	99
5 to 14	4	11	49	46	24	24
15 to 24	33	27	42	51	32	32
25 to 34	119	71	53	60	59	55
35 to 44	641	260	134	104	178	127
45 to 54	2958	1046	427	190	454	250
55 to 64	9674	3913	1380	438	981	491
65 to 74	23,879	12,729	3465	1258	1726	927
75 and over	65,931	51,654	11,525	7236	3122	2317
All ages	3905	2854	705	456	350	24[illegible]

Diseases of the Alimentary System.

Diseases of the alimentary system as defined in the "International Statistical Classification" are still important as causes of death. The rates in Table VI here may be compared with those in Lancaster (1956), although in that paper I had excluded the gastro-enteritis group of diseases from this group. Previously, I had always counted gastro-enteritis among the infective diseases. But with present rates of mortality, it matters little whether deaths from this cause are included here or among the infections.

Diseases of the Genito-Urinary System.

At higher ages, in males especially, diseases of the genito-urinary system are responsible for a considerable number of deaths (Table VII). The very high mas-

culinity at the higher ages is due to deaths in males from hypertrophy of the prostate. At lower ages the deaths are due to acute and chronic nephritis and low-grade infections, and the rates are now very much lower than they were in, say, 1911 to 1920.

Table VII.

The Mortality from Certain Disease Groups in Australia, 1951 to 1955.

Age. (Years.)	Deaths per Million *per Annum*.				
	Genito-Urinary System.		Child-Bearing: Females.	Skin, Cellular and Locomotive System.	
	Males.	Females.		Males.	Females.
0 to 4 ..	41	30	—	35	18
5 to 14 ..	18	19	—	7	4
15 to 24 ..	46	40	60	7	5
25 to 34 ..	79	84	106	6	7
35 to 44 ..	149	181	82	9	13
45 to 54 ..	304	280	4	20	30
55 to 64 ..	690	368	—	70	79
65 to 74 ..	1943	728	—	188	197
75 and over ..	7292	1950	—	549	709
All ages ..	396	218	36	38	50

Child-Bearing.

With the decline of maternal mortality the class of deaths from diseases associated with child-bearing now contributes relatively few deaths.

Skin, Cellular Tissue and Locomotor Systems.

Diseases of the muscles, bones and supporting tissue generally of the body are referred to two classes of the "International Statistical Classification". It may be stated that they are largely infections due to staphylococci and streptococci.

Malformations.

The death rates attributed to malformations in the first year of life or, as we have in Table VIII, in the first five years of life, have remained at a rather constant level over the last forty years. At ages above five years there is now less reluctance to refer deaths back to a cause acting many years previously.

Senility and Ill-Defined Causes.

Certifying practitioners now avoid the use of the terms "senility" and "ill-defined causes". At ages under 75 years the number of deaths assigned to these unsatisfactory classes are few.

Violent and Unsatisfactory Causes.

Violent and unsatisfactory causes are becoming relatively more important than formerly, especially at the lower ages. Among young adults, deaths from accidents form over 70% of the total mortality. This has been discussed in detail by Lancaster (1957*a*). Masculinity is high at all ages except at ages above 75 years, when fractures of the femur cause a great proportion of the female deaths.

The Masculinity of the Death Rates.

In Table IX are given the masculinities of the various classes of death for different age groups. I have already commented on some of these. The masculinities tend to be high for most groups of diseases. The high rates from tuberculosis at older ages may have an occupational background and be associated with pneumonokoniosis. At most ages the female death rates from "other infections" are more favourable than the male, and so generally are the death rates from neoplasms, except over the reproductive ages, when cancer of the uterus and breast are sufficient to make the masculinity low. The death rates at ages over 75 years are really not quite comparable, since the female population tends now to be older than the male. Thus the low masculinity of deaths from the nervous system (chiefly cerebral catastrophes) may not be quite a fair comparison.

Table VIII.

The Mortality from Malformations, Ill-Defined and Violent and Accidental Causes.

Age. (Years.)	Deaths per Million *per Annum*.					
	Malformations.		Senility and Ill-Defined Causes.		Violent and Accidental Causes.	
	Males.	Females.	Males.	Females.	Males.	Females.
0 to 4	1008	862	34	26	554	379
5 to 14	30	25	2	3	291	121
15 to 24	27	19	8	4	1227	166
25 to 34	18	10	8	9	962	163
35 to 44	20	16	15	8	908	218
45 to 54	32	19	27	20	1053	306
55 to 64	24	15	87	30	1400	384
65 to 74	23	18	367	220	1841	701
75 and over	19	20	6134	5568	4020	4033
All ages	132	108	167	190	987	372

Discussion and Summary.

In my survey I have already discussed many of the disease groups in detail, so that it has not been necessary to give a full discussion here.

The mortality from all causes has declined at all ages in females and at the lower ages in males; but at ages above 55 years in males the reductions have ceased. Many differences have developed between the mortality rates in the two sexes.

Table IX.

The Masculinity of the Death Rates in Australia, 1951 to 1955.

Age. (Years.)	Masculinity[1] in the Death Rates from									
	Tuberculosis.	Infections.	Neoplasms.	Nervous Diseases.	Cardio-Vascular Diseases.	Respiratory Diseases.	Alimentary Diseases.	Genito-Urinary Diseases.	Violence.	All Causes.
0 to 4 ..	—[2]	120	102	114	—	116	148	—	146	126
5 to 14 ..	—	123	128	119	—	107	—	—	240	144
15 to 24 ..	—	138	159	123	—	82	—	—	739	265
25 to 34 ..	75	118	82	120	168	88	—	94	590	166
35 to 44 ..	128	149	60	101	247	129	140	82	417	140
45 to 54 ..	334	109	82	85	283	225	182	109	344	153
55 to 64 ..	633	144	124	110	247	315	200	188	365	182
65 to 74 ..	561	150	145	102	186	275	186	267	263	163
75 and over	411	117	144	85	128	159	135	374	100	124
All ages ..	271	118	106	79	137	155	143	182	265	125

[1] The masculinity used here is defined as 100 times the male mortality rate divided by the female mortality rate at the same age.

[2] Where the number of deaths is very few, the rate has not been computed.

Acknowledgement.

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SERUM CHOLESTEROL LEVELS IN THE AGED.

By F. OFNER AND T. O'CONNELL,
Lidcombe State Hospital and Home.

IT has been shown that a raised blood cholesterol level is associated with coronary heart disease (Editorial, 1955; Riegel, 1955; Gofman, 1956) and cerebrovascular disease (Ofner, 1957). However, as these cholesterol determinations were made on the blood of persons already suffering from these diseases, it cannot be argued that a high cholesterol level is incompatible with good health. "There are no figures available to show that subjects with a high level of serum cholesterol maintained over a long period succumb to coronary diseases more often than those with a lower value" (Editorial, 1957). We thought that by investigating the distribution of cholesterol levels of healthy persons in a large community of old people we could provide evidence which would be helpful in solving this problem.

From the Home section of Lidcombe State Hospital and Home, we chose 150 male persons, all in apparent good health, over 70 years of age and whose general condition did not reveal any changes other than those consistent with the physiological process of aging. Serum cholesterol levels were determined in the Microbiology Laboratories of New South Wales by the Liebermann reaction (Kenny, 1952). It was found that the mean value was 169 milligrammes per 100 millilitres, the standard deviation ± 30 milligrammes per 100 millilitres, and the range between 111 and 270 milligrammes per 100 millilitres of blood.

The low values are a conspicuous feature of the present survey. It is also interesting to note the discrepancy between the present figures and those reported from other sources dealing with people of a similar age group. Thus, available American sources show that the lowest mean level of serum cholesterol for aged persons is 278 ± 43 milligrammes per 100 millilitres (Albanese *et alii*, 1958), with a normal range for the total population between 180 and 310 milligrammes per 100 millilitres (Editorial, 1956). A similar survey in Great Britain lists the normal mean of serum cholesterol in elderly males as 268 milligrammes per 100 millilitres (Hobson and Pemberton, 1956). We restricted our comparison to these countries only, because of the similar conditions and general background.

The only Australian figures available were derived from a survey carried out in a comparative study of serum cholesterol values in aborigines and white people of different ages in Central Australia (Schwartz *et alii*, 1957). These are as follows: white males, 264 milligrammes per 100 millilitres; aboriginal males, 217 milligrammes per 100 millilitres.

Analysing the possible reasons for the low values obtained, we restricted ourselves to a consideration of the following factors: (i) The possibility of a drop in the serum cholesterol value, starting in the sixth decade. (ii) The non-survival to this age of the majority who have high values unless with apparent symptoms of atherosclerosis. (iii) Dietary differences. (iv) Differences of occupation and physical activity. The reason for restricting our consideration to these factors is that, once evident pathological conditions were excluded, the remaining ones such as body build, heredity, racial differences, etc. could contribute little if anything to the evaluation of our present analysis. We also thought that as a matter of practical necessity some limit should be imposed on the number of factors considered.

It is assumed that there is an increase in the serum cholesterol level from the second decade until the middle of the fifth, the average annual increment being about 2·2 milligrammes per 100 millilitres (Keys, 1952). However, with regard to the possibility of a drop occurring after the sixth decade, all evidence is hypothetical (Albanese, 1958; Schwartz *et alii*, 1958; Kornerup, 1958). It is not conclusive if falling serum cholesterol levels in ageing age groups are interpreted as a drop occurring in individuals as they grow older. To demonstrate this regression one would require a large number of serial estimations on the same individuals over several decades.

Referring to the hypothesis of non-survival, one could assume that individuals with a high cholesterol value do not reach in good health the high age groups surveyed. This fact could explain the apparent regression reported by other authors. However, further evidence would be necessary to corroborate this assumption.

With regard to the dietary factor, we considered it appropriate to compare dietary levels of the United States of America, the United Kingdom and Australia in order to determine whether variations in cholesterol levels could be explained by differences in the respective diets. The comparative figures are set out in Table I.

Yudkin, in his survey on the correlation of coronary death and diet, quotes Nichols as having shown that increase or decrease in calories, mainly or entirely through carbohydrates, can increase or decrease some of the blood lipoprotein content (Yudkin, 1957). A correlation between high fat intake and increased blood cholesterol levels has been frequently claimed (Editorial, 1955; Hall,

TABLE I.

Estimated Supplies of Nutrients Available for Consumption in Certain Countries (per Head per Day).[1]

Nutrient.	Unit.	United Kingdom.			Canada.			U.S.A.			Australia.		
		Pre-War.	1945.	1955.	Pre-War.	1945.	1955.	Pre-War.	1945.	1955.	Pre-War.	1946–1947.	1955–1956.
Total protein	Gramme.	80·8	89·3	82·5	91·0	90·0	98·0	89·0	103·0	98·0	89·6	92·7	88·1
Fat from all sources ..	Gramme.	130·0	116·0	137·2	116·0	123·0	134·0	132·0	140·0	148·0	133·5	121·7	131·4
Carbohydrate	Gramme.	377·5	383·2	389·0	413·0	388·0	392·0	431·0	420·0	386·0	377·4	424·8	413·9
Energy values (Calories)		3000	2930	3230	3064	3055	3153	3280	3340	3230	3117	3245	3276

[1] From Commonwealth Bureau of Census and Statistics, Canberra: Report on Food Production, 1955–1956.

1955). The same has been claimed for a high protein diet (Harris, 1955). From the figures presented in the table, we were unable to correlate the low values of our survey with nutritional factors. This could be due to undisclosed dietary details such as consumption of unsaturated fatty acids, nicotinic acid, pyridoxin, vitamin E, etc. (Griffith, 1957; Sinclair, 1957).

Concerning the relationship between physical activity and serum cholesterol levels, it has been found that men doing heavy manual labour have lower serum cholesterol levels than others doing light work or engaged in sedentary occupations (Editorial, 1957).

Finally, when an attempt was made to correlate the foregoing considerations with the results of our present survey, it was found that only the factors of occupation and physical exercise showed any relevance. The people investigated in our institution had, in the large majority of instances, been labourers or belonged to a class engaged in manual work. This is the only evident factor we can offer to explain the exceptionally low serum cholesterol levels.

Conclusion and Summary.

Serum cholesterol levels of 150 healthy men over the age of 70 years were estimated. The mean value was 169 milligrammes per 100 millilitres, the standard deviation ± 30 miligrammes per 100 millilitres, and the range 111 to 270 milligrammes per 100 millilitres. A possible explanation for the low figure could be postulated in that all members of the group were healthy and in the majority of instances had been manual workers.

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INFANT FEEDING SIMPLIFIED.

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THE following are the principles on which infant feeding has been based at the Royal Newcastle Hospital Well-Baby Clinic since 1951: (i) The infant is fed on the demand feeding system. (ii) The concept of overfeeding is not recognized. (iii) Full-strength cow's milk is advocated as a suitable food for infants. (iv) Solids are introduced early. (v) The wishes and personality of the mother are always taken into account.

In contrast to the foregoing, the principles of strict schedule feeding, and modification or "humanization" of cow's milk, with a fear of overfeeding, have for many years governed infant feeding. A consideration of the history and theory of these principles shows them to be without foundation.

Historical Background.

Most of the historical factors related to the foregoing have been discussed by Wickes (1953), and the following are the most relevant. One of the first recorded references to overfeeding was made by Rhazes (850-932), of the Arabian school, and he attributed "*Mater puerorum*" to the taking of too much milk. Rhazes described "*Mater puerorum*" as "loud crying, much terror during the night and wakefullness", but later writers referred to it as a febrile illness with convulsions, or classed it with epilepsy (Wickes, 1958). This indictment of overfeeding as the cause of such an ill-defined clinical state set a precedent for many subsequent writers to cite overfeeding as the cause of numerous disorders. Perhaps the first of the pædiatric works was that of Paul Bagellardus, and this was printed in Padua in 1472. It was largely compiled from the ancients, following such writers as Rhazes, and in it hiccups, diarrhœa and vomiting were attributed to overfeeding. Hence we can see that overfeeding has been put forward from earliest times as a cause for various digestive upsets, and had its origin in the folk-lore that governed the subject. There was no scientific basis for this indictment of overfeeding, and it is interesting that Thomas Phayer (1510-1560), who wrote the first English textbook on the subject, entitled the "Boke on Children", avowed his disinclination to deal with the hygiene and feeding of infants at all, since in his day these matters were completely dominated by the midwives. No great distinction was ever made between faulty feeding, forced feeding and over-feeding. Even as late as the eighteenth century, it was still sometimes the custom to force-feed infants with great quantities of such foods as cereals cooked in broth, and this was often first chewed by the nurse to facilitate digestion. In our own day it is still believed that overfeeding may lead to vomiting, diarrhœa, loss of weight and death; but Wickes (1952) has stated that no authentic case history of this unlikely course of events is recorded in the literature.

Schedule feeding was a much later innovation, and Wickes (1953) has also included this subject in his historical reviews. He states that Cadogan in 1748 seems to have been the first writer of importance to extol its virtues, and Hugh Smith, in his "Letters to Married Women on the Nursing and Management of Children", published in 1792, was the first author to set down the actual quantities of milk to be given to infants of various ages. These amounts were based on age, and were his impressions of how much these infants should take. Later, when the chemical analysis of milk became a practical proposition at the beginning of the nineteenth

century, it was thought that the difference in composition of cow's milk and human milk might be the answer to these feeding problems of infancy. Attempts were made to humanize cow's milk, and numerous formulæ and complicated systems of infant feeding became the vogue, with strict regulation of times and quantities. Numerous writers put forward their views on the subject which became very complex. An important reason for this growing interest in infant feeding was the great awakening of the social conscience which began in the latter half of the eighteenth century. The result was that, whereas previously infant life had had very little importance, it now became very important, and the high mortality from severe vomiting and diarrhœa, which we now know to have been due to gastro-enteritis, dominated thinking on the subject. When the dangers from infection of milk became known towards the end of the nineteenth century, as a result of the work of Pasteur and Koch, the way was open for the control of gastro-enteritis; but the ideas propounded earlier had become firmly entrenched. These ideas have continued to the present day.

There can be no doubt that infants fed on previously accepted systems thrived. Infants fed on any system will thrive and grow provided that they are given an adequate diet. They may be forced to conform to the arbitrary daily standards set up for them; but the over-all experience may not be a pleasant one for either mother or baby.

Demand Feeding.

The demand feeding system (Aldrich and Hewitt, 1947; Illingworth and Stone, 1952) recognizes that the healthy infant's natural appetite is the best criterion for the amount of food he requires. It recognizes individual variations from infant to infant, both in the interval between feeds and in the amount taken at the feeds. The infant is fed as often as he demands. Most infants quickly settle to a regular schedule of their own. If the baby is consistently demanding to be fed more frequently than about every three hours, this is taken as a sign of insufficient milk in the breast-fed, or of some disturbance in the mother-child relationship. Flexibility is allowed, such that if it suits the household better to wake the baby for a feed at any time, this is accepted, and if the personality of any mother is such that she is not happy on the demand system, then a type of schedule feeding is used. Another example of the use of a type of schedule feeding is the case of the very lethargic baby, who may demand food at infrequent intervals. As soon as the infant becomes more vigorous, he reverts to demand feeding.

It is interesting to note that as long ago as 1893, Dr. Wilfred Nickson of this hospital wrote:

> No golden rule can be laid down as to the amount of food a baby will take, or how often it will require it. So far I have never seen a standard baby . . . They all differ one from another, and each one has some little peculiarity, and close observation of every case will alone give the key.

For successful establishment of demand feeding in hospital some type of rooming-in system is necessary. The principle of this system is that the mother and baby are kept as a unit, if possible they are housed together during the whole 24 hours and the mother is encouraged to undertake the ordinary care of her baby. In this way she is there when the baby demands, and she learns to recognize and meet his needs. Most difficulties are thus met in hospital, whereas on other systems difficulties begin when the mother goes home.

Overfeeding.

The origin of the concept of overfeeding has been discussed, and this concept has now been rejected in some centres (Wickes, 1952; Illingworth, 1954; Elyan, 1955). Illingworth believes that for all practical purposes, overfeeding in a young baby is a myth. It has been blamed at times for practically all real or imagined disturbances of digestion in infants. The study of the behaviour of large numbers of normal babies convinces us that mild vomiting or posseting after meals, numerous bowel actions —e.g., five or six per day—or alternatively only one in several days, an occasional restless period during the day, and weight gains of almost one pound in one week are variations of the normal and are not due to overfeeding.

Full-Strength Cow's Milk.

We have already indicated the origin of the opposition to full-strength cow's milk as a food for infants. The need to humanize cow's milk has been based on the principle that the percentage of protein in cow's milk is almost three times as high as in human milk (see Table I),

TABLE I.

Composition of Human and Cow's Milk.[1]

Type of Milk.	Grammes per 100 Millilitres (3·5 Fluid Ounces, Approximately).					Calories per Fluid Ounce (Approximately).
	Protein.	Carbohydrate.	Fat.	Water.	Calories.	
Human milk ..	1·2	7·0	3·8	87·6	71	20
Cow's milk ..	3·3	4·8	3·7	87·3	69	20

[1] *After* Macy *et alii* (1953).

and the basis of cow's milk formulæ has been that the protein is diluted by adding water and the caloric level maintained by adding carbohydrate. We do not accept these concepts. Milk is a very dilute substance (87% water—see Table I). In round figures, a typical bottle feeding of between three and four ounces (100 millilitres) of either cow's milk or breast milk would contain approximately nine-tenths water and one-tenth solids. As the protein content of cow's milk is 3·3 grammes per 100 millilitres and that of human milk is 1·2 grammes per 100 millilitres, the difference in the protein as solid per feed is only 2·1 grammes (approximately half a teaspoonful). Even with the extra half teaspoonful of protein per bottle, cow's milk is still a very dilute substance, and there is no evidence that this extra protein is harmful to infants. Indeed, Stearns (1956) stated that "a young baby has a capacity to digest and absorb many times the amount of protein that he would normally be fed in human milk, and this capacity apparently is at its greatest in early infancy". This statement was based on studies of nitrogen metabolism of infants being fed undiluted cow's milk.

Under certain conditions—e.g., hot weather—infants may need extra water, and as a routine we recommend that this is to be offered, but that there is no necessity to force water on an infant who does not want it. Attention has been drawn by Pratt and Synderman (1953) to a considerable increase in the renal solute load with the higher protein and mineral intake of the unmodified milk used in their experiment. However, in their experiment they used premature babies as subjects, and the unmodified milk mixture consisted of a stock mixture of evaporated milk diluted with water; this dilution contained 27 Calories per ounce, instead of the usual 20 Calories per ounce of whole cow's milk or breast milk. We would point out that, even with premature babies and this mixture of higher caloric value, no harmful effects were noted, and the conclusion was only that the margin of safety against dehydration was decreased. Our report deals with healthy infants being fed whole cow's milk (20 Calories per ounce) and offered extra water between feeds.

The qualitative difference between human and cow's milk, which was at one time considered to be of such importance, is no longer so regarded. Levine (1956) has stated that "the absorption and utilization and retention of protein were equivalent whether the infant received the protein in the form of cow's milk or human milk".

This statement was reported from the W.H.O. Seminar on Infant Metabolism in 1950 and drew attention to the fact that human milk is no longer considered biologically superior to cow's milk.

Textbooks and manuals of infant feeding and reports in journals state that human milk is more easily digested by infants than cow's milk. In most cases the reason

given is that human milk contains less casein than does cow's milk, and that the casein of cow's milk produces large and tough curds in the baby's stomach. It is of special interest to note that at the 1950 W.H.O. seminar cited above, Melander (1956) presented evidence that the casein of cow's milk was more easily digested than the casein of human milk when treated with pepsin, trypsin or gastric juice from infants.

Some of the factors which are stated in the literature to improve the digestibility of cow's milk are heat treatment, dilution, addition of acid and homogenization. It is difficult to assess the relative importance of any of these factors, since heat treatment must be given to cow's milk to render it microbiologically safe as a food for infants. We have found that statements on digestibility of cow's milk appearing in the literature are not supported by clinical trials, and it is our experience in dealing with large numbers of babies who take undiluted heat-treated cow's milk as the whole or part of their diet that they do not experience difficulty in digesting it. The heat treatment used in the Royal Newcastle Hospital Well-Baby Clinic has previously been reported (Cornish and Raphael, 1954).

If the amount and type of protein in full strength cow's milk are no longer regarded as unsuitable for infants, then infant formulæ become unnecessary.

The fat content of human milk and cow's milk is comparable (see Table I). Milk from some breeds of cows has a much higher fat content than the pooled cows' milk referred to in Table I. If a baby is to be fed from the family cow, the mother is advised not to use the top milk, and if the cow is of a breed which yields a high percentage of fat, then she is advised to skim off the top layer of cream. The standardized fat content in both dried milk and pasteurized milk is an advantage (*Pure Food Act* of New South Wales states milk and dried milk "shall contain not less than three and two-tenths parts per centum of milk fat"). If bottled pasteurized milk is used the mothers are advised to shake the milk bottle in order to distribute the cream evenly through each of the baby's feedings.

Solids.

We consider that it is important for infants to be well established on suitable solids by the age of approximately six months, as at about this time they develop their own likes and dislikes, and may resist the introduction of solids after this. It is also important (*a*) in that it enables mothers to supplement a dwindling supply of breast milk without the inconvenience of complementing it, (*b*) in its satiety value for the hungry baby, and (*c*) in the provision of extra iron, in which milk is deficient.

As early as 1935, Grover Powers recommended that acquaintance with cups, spoons and solid food should be made before the age of three months for the sake of training alone, apart from any nutritional value of the food taken (Powers, 1935).

It is our practice, in cases of satisfactory feeding, to use the period from three to six months as an educational period in the acceptance of a variety of solid foods. Because of the difference in the growth and development of infants, no definite time-table is used for the time of introduction or the type of foods offered. Any solids which are soft enough to be mashed are suitable, and sieving is not necessary. The hungry baby will accept these solids within the first month of life. We have had no evidence of any undesirable effect from this early introduction of solids. On the other hand, weaning problems are almost unknown in this clinic, as there is no abrupt change at any definite time in the type of food offered, but on the contrary a gradual transition from milk to solid food.

Vitamin Supplementation.

It is recognized that all artificially fed infants require added vitamin C, which is supplied in the form of orange juice, tablets or proprietary preparations.

Vitamin D supplements used prophylatically against rickets have been proved effective in countries where the incidence was high owing to the environment—lack of sunshine, altitude of the sun and filtering of the sun's rays by smoke. The Australian climate is such that, throughout the year, the sun is active in producing vitamin D from the skin sterols. No additional vitamin D is given to either breast-fed or bottle-fed babies as a vitamin supplement, but "Farex" is given as a routine measure, and is an excellent source of this vitamin.

The Wishes and Personality of the Mother.

The role of the mother has already been mentioned under the heading of demand feeding. The personality of the mother is most important in any discussion on infant feeding, as it is our experience that many of the so-called feeding problems stem from poor mother-child relationship. The assessment of the mother and baby and of their relationship to each other is one of the most important aspects of management. The mother-child relationship is a product of the baby's physical and psychological make-up and the mother's attitude to her motherhood, her temperament, her emotional maturity, her cultural background and her previous experience. The infant is immediately aware of any disturbance. This disturbance may lead to difficulties in feeding and pacifying the baby, who is easily labelled a "feeding problem". A vicious cycle may be set up, which will not be remedied by a change in the type of feeding. This can be a long-term management problem, and sometimes the best way of calming the mother is to sedate the baby. (See also "Royal Newcastle Hospital Baby Clinic Manual", 1958.)

As will be seen from the foregoing, the essence of our method is flexibility and simplicity. If a mother wishes to feed her baby on some proprietary brand of milk, in which she has confidence, no objection is raised, provided that she does not restrict the baby to the amount for age as stated on the label. Most proprietary infant foods contain approximately 40 Calories per level medicinal tablespoonful, and we have found that a simple way of using these is to advise the mother that one level medicinal tablespoonful be added to every two ounces of water.

Evaluation of Method.

The foregoing is a discussion of the theoretical basis of the principles of this method of infant feeding. The controversial points in our simplification of infant feeding are the self-demand system, the disregard for possible overfeeding and the use of full-strength cow's milk from the commencement of artificial feeding. If these principles are wrong, then a sample of babies in whose feeding all three factors operate should show obvious deficiencies in growth and development, and should exhibit feeding difficulties. It is our practice to use full-strength heat-treated cow's milk for complementing the feeding of breast-fed babies and for mixing with "Farex", and as the preferred milk for mothers who have no definite opinion of their own; but because of the flexibility and permissiveness of the method, it is difficult to obtain a large sample in which all factors operate.

Selection of Sample.

To obtain a sample in which all factors operated and in which any deficiencies should therefore be apparent, the following criteria were adopted: the infants should have been artificially fed on a self-demand system without regard for overfeeding, and fed on whole cow's milk within the first five weeks of life. Data from a survey carried out in 1954-1955 were used. This survey had been planned to review, at the age of 12 months, all babies born at the hospital between November 1, 1954, and October 31, 1955, in order to assess the results of our methods and to obtain information about the general feeding methods in this community.

Mothers of all babies born during the above-mentioned period, except those whose babies were known to have died, or whose babies had been adopted, were sent circulars requesting them to present their babies for a health survey at the age of 12 months. These numbered 1124, and included mothers who attended the Royal Newcastle Hospital Well-Baby Clinic or baby health centres

in the district, or who had not attended any clinic. Of these babies, 99 had New Australian mothers from non-English-speaking countries, and these were excluded from the survey as in most cases the language difficulty was such as to make assessment of the feeding methods impossible (Table II).

TABLE II.

Babies Born in Royal Newcastle Hospital, November 1, 1954, to October 31, 1955: 1124 Infants.[1]

Information Concerning Babies.	Number of Babies.
New Australian mothers	99
Insufficient data[2] for analysis	242
Sufficient data for analysis	783
Total	1124

[1] Babies for adoption and babies deceased in the first year were excluded.

[2] Babies who did not attend the clinic at least twice in the first six months or did not attend the survey at the age of one year.

A preliminary sorting on the relative numbers of breast-fed and bottle-fed babies, and on the type of milk used for the bottle-fed babies, was then carried out. The standard adopted for sufficient information for analysis was at least two visits to the Well-Baby Clinic in the first six months of life, or attendance at the survey at the age of one year (Table II). Babies with insufficient data for analysis numbered 242, and what is known about these is included in Table III.

We would point out that no distinction is drawn between the Royal Newcastle Hospital Well-Baby Clinic, and other clinics of the district, to the mothers of infants born in this hospital. The hospital also draws patients from a wide geographical area, such that distance alone is often sufficient to prevent attendance at the clinic.

As it was decided to select as our sample those infants fed whole cow's milk within the first five weeks of life, the sorting of the 783 with sufficient data for analysis was carried out on the basis of the type of feeding at the age of five weeks (see Table IV). The sample we were seeking contained 30 babies. Of these, seven were excluded, four because of prematurity, one because of microcephaly and one because of congenital mental deficiency, and one who was not managed at this clinic (see Table IV). As has been previously stated, one reason for the small size of the sample, in such a large group of babies, is the flexible attitude to the type of milk used by the mothers, and another major factor is the high incidence of breast feeding at the Royal Newcastle Hospital. Mothers of all babies born in this hospital are given every help and encouragement in the establishment and maintenance of breast feeding, and this is continued with those seen in the baby clinic. The success of these methods can be seen by reference to the results of a previous survey undertaken in 1953-1954, shown in Table V, in which 92·7% of the babies are fully breast-fed on their discharge from hospital.

Whilst many mothers who artificially feed their infants have obvious reasons for the failure of breast feeding, or for their desire to feed the infant artificially, it should also be realized that often the first line of retreat of the anxious or inadequate mothers is to feed their infants artificially. In assessing artificially fed infants, this needs to be kept in mind.

Assessment of Sample.

The sample was assessed by plotting the mean weight gain of the sample against a standard, and by an examination of the clinical records made at visits to the clinic and at the survey at the age of one year, for evidence of failure to thrive, gastro-intestinal symptoms or feeding problems.

The standard adopted for comparison of weight gains was that established by the City of Melbourne Department of Health (1946). This has recently been adapted by the Commonwealth Department of Health (1957) as a standard for Australia. In the standard the weights of infants are presented as a band or zone bounded on the lower limit by the tenth percentile and on the upper limit by the ninetieth percentile, and within this zone

TABLE III.

Royal Newcastle Hospital: 242 Babies with Insufficient Data for Analysis.

Feeding on Discharge from Hospital: Attendance at Well-Baby Clinic.	Number of Babies.
Discharged fully breast fed: no attendance	154
Discharged fully breast fed: one attendance	53
Discharged breast-fed and bottle-fed: no attendance	14
Discharged breast-fed and bottle-fed: one attendance	7
Discharged bottle-fed: no attendance	11
Discharged bottle-fed: one attendance	3
Total	242

[1] Babies who did not attend the clinic at least twice in the first six months or did not attend the survey at the age of one year.

80% of babies lie. Since boys are heavier than girls at this age, two separate zones are shown. The weights taken to compile the standard were taken from infants clad in singlets.

The sample consists of 14 boys and nine girls, and in view of these small numbers, it was considered more satisfactory to combine the sexes in the sample. Because of this, the standard was similarly adapted. Lines were plotted midway between the two ninetieth percentiles and the two tenth percentiles, and the mean weight increases of the sample studied are shown in relation to the combined graph for boys and girls. The weight

TABLE IV.

783 Babies with Sufficient Data for Analysis.

Type of Feeding.	*Number of* Babies.
Breast-fed or part breast-fed, at 5 weeks	646
Bottle-fed, not whole cow's milk, within 5 weeks	107
Bottle-fed, whole cow's milk, within 5 weeks	30[1]
Total	783

[1] Including four premature babies, one microcephalic, one congenital mental defective; one not managed at Royal Newcastle Hospital Baby Clinic.

gains were taken from birth to 25 weeks, as the main differences between this and other methods of infant feeding are found in this period, and this is the time when any undesirable effect should be most obvious. The weights were taken from the baby clinic records. The mothers are as a routine requested to attend the clinic every fortnight up to the first three months, and every month from then up to the first six months. The baby's clothes are not removed, except excess winter clothing, as minor variations in weight from week to week are not stressed, and no set standard of weekly gain is imposed. The ages of the babies were rounded off to the nearest week, and the mean weight for all babies weighed on any particular week was computed. The mean birth weight (bare) for all 23 babies was computed; but for the remainder of the weeks, only a proportion are represented on any one week. A smoothed mean was computed (Figure I). It can be seen from Figure I that the weight increases for the sample are satisfactory.

General Assessment of Health.

The records made of the 23 infants at clinic visits during the 25 weeks, and at the examination at 12 months,

were examined for evidence of failure to thrive, gastro-intestinal symptoms or feeding problems.

None of these 23 infants exhibited any evidence of failure to thrive or feeding problem that could be attributed to the type of food or feeding methods.

Twelve of the infants, who had been examined regularly at the clinic, and also at the survey at the age of one year, had thrived, had no gastro-intestinal symptoms of any kind, and had been given a satisfactory health rating on examination at the survey. The mothers considered them to be good feeders, and regarded the feeding methods as satisfactory. The only complaint about these was an occasional one of a teething "cold" or a "sticky" eye.

TABLE V.

Type of Feeding on Discharge from the Royal Newcastle Hospital. All Babies Born between July, 1953, and June, 1954.[1]

Type of Feeding.	Number of Babies.
Fully breast-fed	1082 (92·7%)
Breast-fed and artificially fed ..	40 (3·4%)
Artificially fed	45 (3·9%)
Total	1167 (100·0%)

[1] Breast-feeding was not attempted in 83 cases (stillbirths, neonatal deaths, maternal deaths, babies for adoption and when lactation was contraindicated owing to organic disease of the mother).

In three cases, there was a complaint of constipation. In only one case was this a problem, in that it was recurrent for several months. Interestingly enough, it first occurred at the age of four months, at which time the infant was well established on solids and orange juice.

Three of the infants were admitted to hospital in their first year. One was admitted at the age of seven weeks because of a history of vomiting. No change in feeding was made, no evidence of vomiting was observed, and the child was discharged from hospital as a normal child. One was examined at nine weeks with a history of colic, and was admitted to hospital at 11 weeks with pneumonia. Again no change was made in the feeding, and no evidence of colic was found whilst the child was in hospital. One child developed bilateral otitis media at the age of six months, which persisted despite treatment till the child was admitted to hospital at eight months for hospital treatment, at which stage the condition cleared.

In two other cases, at six and seven weeks respectively, a complaint was made of diarrhœa. This had disappeared without treatment at the next visit.

Two of the infants were not seen at the survey and were seen only twice at the clinic in the first six weeks. At a later follow-up investigation it was found that one of these had ceased attending the Well-Baby Clinic because of the distance involved. This infant was taken to another clinic, where a change to a proprietary brand of milk was advised. Up till this stage, the infant has been progressing well, and had had no gastro-intestinal symptoms. The other could not be traced for follow-up examination, but was progressing well at the second visit.

The final infant presented a management problem. When the baby was three weeks old, the mother, because of some soreness of her breast, had put the infant on diluted cow's milk. When seen in the clinic, she was unsure of herself and anxious, and complained of the infant's forcible vomiting. Feeding with whole cow's milk was instituted, and the vomiting had settled down at the next visit. However, recurrent complaints of vomiting, colic and poor general health continued. Despite these, the mother was encouraged in normal feeding routines, and the baby's general health at 12 months was considered satisfactory, there being no feeding problem at this age. This mother was of the very anxious type, and appeared to magnify all symptoms. This type of case can easily lead to a trial of a great variety of milk formulæ, with no greater success and with a great increase in the mother's anxiety.

Summary and Conclusions.

The historical background of the development of infant feeding has been discussed, and an attempt has been made to account for the origin of the previous complicated systems.

The method of infant feeding at the Royal Newcastle Hospital Well-Baby Clinic has been described. Its main advantage is its simplicity. It can be understood and used by the general practitioner, and can also be easily explained to and understood by the mother. It is flexible, and can thus be adapted to suit all mothers.

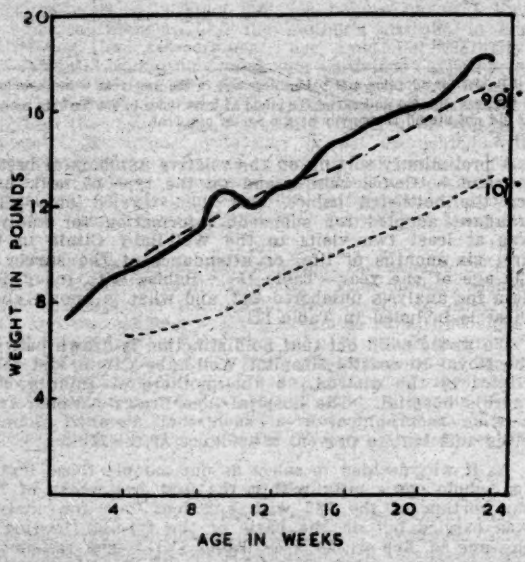

FIGURE I.

Mean weights of sample compared with standard. The regression of the smoothed mean of the weights of the 23 infants of the sample is shown in heavy line. The upper 90th percentile, and the lower 10th percentile of the combined standards for boys and girls are recorded in broken lines and are drawn after the data of the City of Melbourne Department of Health (1946). The standard deviation of weight is 2·07 pounds. It is assumed that the standard deviation for weight is more or less constant with age. The asterisks denote percentiles.

These views are based on experience gained at the Royal Newcastle Hospital Well-Baby Clinic, where during the year 1958 the average attendance per clinic day (Monday to Friday) has been 22·2. The sample of infants chosen for assessment was that in which feeding problems and evidence of failure to thrive should have been obvious if this method was undesirable. On the contrary, the mean growth curve and general health of the sample were satisfactory.

It is obvious that infants will grow and develop provided they are given an adequate diet, but we consider that most methods of infant feeding are unnecessarily complicated and far too rigid. They make the subject unintelligible to those without specialist training, are more of a hindrance than a help in the over-all management of infant feeding and should not be perpetuated.

Acknowledgements.

We should like to acknowledge our indebtedness to Dr. H. O. Lancaster, School of Public Health and Tropical Medicine, University of Sydney, for advice. We wish to record our appreciation of the help given by Miss Eneid Davies, Head of the Dietary Department, Royal Newcastle

Hospital, for making dietetic staff available for this work. Our thanks are due to the nursing staff for assistance in the clinic, and also to Mrs. Koola Pluck, Librarian, Miss Laurel Windross, Clerical Staff Supervisor, Miss Mavis Towns, Medical Records Librarian and Miss Jeanette Macdonald, Illustration Section of the X-ray Department, for assistance in the preparation of the manuscript.

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EATING HABITS AND PREGNANCY.

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IT is common experience that any habit is hard to change. When a woman becomes pregnant, it is frequently demanded that she should suddenly alter her diet, but it is usually impossible to assess the extent to which this occurs. It will depend largely on the degree of change required and on the woman's emotional attitude to pregnancy, and it must be accepted that the latter may be such that it may lead to concealment of failure to follow advice. For these reasons, a study of nutrition and pregnancy has been made, with emphasis given to what was habitually eaten prior to conception. It was thought that this would give a more accurate nutritional assessment than the customary inquiry into diet during pregnancy, and that if nutritional preparation for pregnancy was important, it might be related more closely to the complications and outcome.

This paper is essentially introductory, in that the material of the investigation and the methods of study employed are described, and the significance of parity and past obstetrical performance in assessment is demonstrated. The importance of protein in the diet in relation to certain complications which are possibly nutritionally determined will be shown.

[1] King George V Jubilee Research Scholar.

Plan of the Investigation.

Four women were selected at random each week from between 30 and 40 making their first visit to an ante-natal clinic at The Royal Women's Hospital, Melbourne. No account was taken of age, parity, period of gestation and presence of complications. A dietitian inquired into their present nutritional habits, and certain laboratory investigations were performed. On the following week, a physician (J.H.B.) assessed their dietary background, past, present and family histories, and made a full clinical examination with particular reference to nutritional status. He did not see the patient again. An obstetrical analysis was made after delivery (F.M.C.F.), and this was done without knowledge of the results of the previous studies. In this way it was believed that a critical appraisal could be made of the impact of nutritional habits in pregnancy.

TABLE I.

The Period of Gestation, the Mean Age and the Mean Parity of Patients at their First Ante-Natal Attendance.

Period of Gestation. (Weeks.)	Number of Patients.	Mean Age. (Years.)	Mean Parity.
5 to 9	37	27·6	3·00
10 to 14	60	26·4	2·50
15 to 19	36	26·1	3·25
20 to 24	13	25·8	2·54
25 to 29	20	26·6	3·05
30 to 34	14	25·3	3·00
35 to 39	8	23·6	2·13
40	1	26·0	1·00

TABLE II.

Definition of Complications of Pregnancy.

Complication.	Definition.
Anæmia	Hæmoglobin value less than 11·5 grammes per 100 millilitres at any stage of pregnancy.
Pre-eclampsia	Two or three of the following criteria present: (i) generalized œdema; (ii) albuminuria; (iii) a relative rise of blood pressure of more than 20 millimetres of mercury systolic, or 10 millimetres diastolic.
Essential hypertension ..	Blood pressure greater than 140/90 millimetres of mercury on more than one occasion in the absence of generalized œdema and albuminuria.
Abortion	Termination of pregnancy before the twenty-eighth week.
Threatened abortion ..	Bleeding *per vaginam* before the twenty-eighth week with the pregnancy continuing.
Hyperemesis	Vomiting sufficient to produce ketonuria.
Pyelitis	Pyuria and the culture of a pathogenic organism.
Placental insufficiency ..	(i) Failure of the fœtus to grow *in utero*, or (ii) meconium in the liquor without mechanical cause.
Prematurity	Baby less than 2500 grammes, and placental insufficiency not the cause.
Prolonged labour ..	Labour in excess of 24 hours.
Post-partum hæmorrhage	Blood loss *post partum* of 20 or more ounces.
Prolonged pregnancy ..	Onset of labour more than 14 days after the expected due date calculated by Naegele's rule.

Two hundred women were referred for study, but eleven did not present for initial clinical appraisal. Their exclusion does not interfere with the conclusions reached,

TABLE III.

The Number of Cases of Each Defined Complication and the Nature and Number of Associated Complications.

Row Number.	Obstetrical Status.	Total Cases.	Column Number.													
			2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Normal	69	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	Anæmia	59	37	7	5	1	4	3	3	3	3	1	—	4	—	—
3	Preeclampsia	26	7	11	4	—	1	1	—	3	—	1	2	—	2	2
4	Essential hypertension	11	5	4	3	—	3	—	1	2	—	—	—	—	—	—
5	Abortion	12	1	—	—	9	2	—	—	—	—	—	—	—	—	—
6	Threatened abortion	8	4	1	3	2	2	—	—	—	—	—	—	—	—	—
7	Hyperemesis	5	3	1	—	—	—	2	1	1	—	—	—	1	—	—
8	Pyelitis	6	3	—	1	—	—	1	1	—	1	—	1	1	—	—
9	Placental insufficiency	8	3	3	2	—	—	1	—	3	—	—	1	1	—	—
10	Prematurity	6	3	—	—	—	—	—	1	—	3	1	—	—	—	1
11	Stillbirths and fœtal abnormality	2	1	1	—	—	—	—	—	—	1	—	—	—	—	1
12	Prolonged labour	9	—	2	—	—	—	—	1	1	—	—	4	2	1	—
13	Post-partum hæmorrhage and manual removal	10	4	—	—	—	—	1	1	1	—	—	2	4	—	—
14	Prolonged pregnancy	9	1	2	—	—	—	—	—	—	—	—	1	—	6	—
15	Accidental hæmorrhage	2	—	2	—	—	—	—	—	—	1	1	—	—	—	—

for these are based on the final obstetrical analysis of the remaining patients.

Obstetrical Assessment.

The period of gestation at the time of the patient's first ante-natal attendance and calculated from the first day of the last normal menstrual period, showed a biphasic distribution, which was not related to age or parity (Table I). A possible explanation is two populations differing in their attitude to pregnancy.

The patients were divided into those with a normal and those with an abnormal pregnancy. In the former group, which comprised 69 patients (36%), some patients were included with certain essentially mechanical complications, namely fœtal malpresentations and malpositions. Those with abnormal pregnancies were divided according to the nature of the complication, and these have been defined where necessary in Table II. It is fundamental to the present approach that normality of pregnancy can only be decided after delivery. Many investigations can be criticized for failure to recognize this (Bolton, 1953).

The division of patients according to the nature of the abnormality of pregnancy is presented in Table III. This shows both the number of cases of each defined complication and the nature and number of associated complications. There were 85 patients (45%) with a single abnormality (found where a numbered row meets a similarly numbered column), and 35 (19%) with more than one. The rest were normal.

Dietitian's Appraisal.

The dietitian obtained a full history of the diet in pregnancy from 160 patients. The mean values for some important nutriments are compared, in Table IV, with the recommended values for pregnancy (Sherman and Lanford, 1943) and with the findings of The Vanderbilt Cooperative Study of Maternal and Infant Nutrition (McGanity *et alii*, 1954)—the largest investigation into the effect of diet on pregnancy that has been published. It is seen that our material deviates more from normal standards, and is more likely, therefore, to give positive answers to problems which may be related to nutrition.

TABLE IV.

Daily Mean Values for Certain Nutriments.

Nutriment.	Present Series.	Approximate Mean Values. (Vanderbilt.)	Recommended Values. (Sherman and Lanford.)
Protein (grammes)	68	73	85
Calcium (grammes)	0·7	1·1	1·5
Iron (milligrammes)	9·9	13·3	15
Vitamin A (international units)	3891	6300	6000
Thiamine (milligrammes)	0·7	1·5	1·8
Vitamin C (milligrammes)	82	61	100

Nutritional Division of Complications.

In considering the influence of nutrition on pregnancy, it is necessary to divide complications into two arbitrary groups: those possibly due to poor diet and those less likely to be nutritionally determined. In the former group were included preeclampsia, abortion, threatened abortion and accidental hæmorrhage, hyperemesis and pyelitis, prematurity and prolonged pregnancy, placental insufficiency, stillbirth and fœtal abnormality, and these complications were regarded as dominant. In the latter group were placed essential hypertension, prolonged labour, abnormalities of the third stage and anæmia without complication. The place of the last may be questioned, and the reasons for this are as follows. Anæmia of pregnancy is in most patients due to iron deficiency and poor iron stores; these may be nutritional in origin, but may also result from previous excessive menstrual loss or from rapidly repeated pregnancies. Anæmia is readily recognized from routine hæmoglobin determinations performed during pregnancy, and is usually rapidly remedied by the therapeutic administration of iron. Its occurrence, therefore, is commonly short-term and unlikely to have a great effect on the outcome of pregnancy. Further, many patients take iron prophylactically, so that poor nutritional habits in respect to iron will not be reflected in the hæmoglobin level. Finally, in this paper anæmia is considered to be present at a level below 11·5 grammes per 100 millilitres, which is usually considered normal in pregnancy. Undoubtedly, there are some patients whose anæmia is nutritional in origin, but their inclusion with the "less likely to be nutritionally determined" group of complications obviates statistical bias, which might favour the present proposition.

TABLE V.

Relation of Parity to the Number of Complicated Pregnancies.

Parity.	Number of Normal Pregnancies.	Number of Abnormal Pregnancies.	Percentage of Abnormal Pregnancies.
Primipara	20	31	60·8
Multipara	86	52	37·7

Significance of Parity and Past Obstetrical Performance.

It is recognized that complications are more likely to occur in primigravidæ than in multigravidæ. In the

present investigation, a comparison of the nature of the observed pregnancy, whether normal (including patients who were anæmic but had no other complication) or abnormal, showed a highly significant difference in the percentage of abnormal pregnancies in the two parity groups (Table V). This emphasizes that any comparison between normal and abnormal pregnancies without this segregation could show differences which were the result of parity rather than the factor being examined.

TABLE VI.

Relation of Nature of Present Pregnancy to Past Obstetrical Performance.

Nature of Present Pregnancy.	Number of Patients.	Number of Previous Pregnancies.	Number of Living Children.	Percentage Living Children (Reproductive Efficiency).
Normal ..	86	210	182	86·7
Abnormal ..	52	138	103	74·6

Placed with the multigravidæ in Table V are 12 patients who had no surviving child despite one or more previous pregnancies. This group is heterogeneous in that past stillbirths, neonatal deaths and fœtal loss from abortion are included, and its significance is shown by the present observed pregnancy which was abnormal in nine patients. The importance of past performance in pregnancy has previously been shown (Lawson *et alii*, 1953), and the term reproductive efficiency was used to describe the percentage of full-term normal children in the total pregnancies of any population group. In the present investigation, when the 138 multigravidæ are divided according to whether the present observed pregnancy was normal or abnormal and then investigated in terms of total pregnancies and numbers of living children, the reproductive efficiency of the two groups (Table VI) shows a difference which is statistically significant ($\chi^2 = 7{\cdot}34$). This indicates that previous difficulties in pregnancy tend to be perpetuated. This is important, because if a nutritional defect can be proved, the pattern may be modified by dietary education.

TABLE VII.

Mean Daily First Grade Protein Intake (Grammes) of Patients with Possibly Nutritionally Determined Complications Compared with Remaining Patients.

With Possibly Nutritionally Determined Complications.	Parity.	Number of Patients.	Sum.	Sum of Squares.	Mean Daily First Grade Protein Intake. (Grammes.)
No.	Primigravidæ	24	1024	48,040	42·60
	Multigravidæ	86	3329	146,408	38·71
Yes.	Primigravidæ	20	745	31,713	37·25
	Multigravidæ	27	876	32,354	32·44

TABLE VIII.

The Usual Variations in Significant Protein Meals per Day.

Number of Significant Protein Meals per Day.	Breakfast.	Lunch.	Dinner.
3	Eggs or chops or kidneys, etc.	Cold meat, grill, etc.	Grill, roast meat, etc.
2	Tea and toast or cereal and toast.	Cold meat, grill, etc.	Grill, roast meat, etc.
1	Tea and toast or cereal and toast.	Sandwiches or "what goes".	Grill, roast meat, etc.

Importance of Protein in Diet.

If patients with complications which are possibly nutritionally determined are compared with the remaining patients in terms of the dietitian's assessment of diet in pregnancy, it is found (Table VII) that they show significantly lower first grade protein intake ($t = 2{\cdot}47$ and $\phi = 155$) and that parity has no effect.

Analysis was then made in terms of significant protein meals (Bolton, 1955) prior to pregnancy. Assessment by this method differs from the dietitian's approach not only in the time relation to pregnancy but also in that it reflects habit and gives emphasis to the nature of the daily protein intake in its usual variations (Table VIII). This showed again (Table IX) the importance of protein in relation to complications of probable nutritional origin. It may be concluded that faulty diet is a cause of reduced reproductive efficiency in some patients.

TABLE IX.

Mean Daily Number of Significant Protein Meals of Patients with Possibly Nutritionally Determined Complications Compared with Remaining Patients.

With Possibly Nutritionally Determined Complications.	Parity.	Number of Patients.	Sum.	Sum of Squares.	Mean Daily Number of Significant Protein Meals.
No.	Primigravidæ	27	45·0	90·00	1·67
	Multigravidæ	102	183·0	344·00	1·79
Yes.	Primigravidæ	24	37·5	70·25	1·56
	Multigravidæ	36	50·0	82·00	1·39

Summary.

1. The material and method of an investigation into eating habits and pregnancy are described.

2. It is shown that parity must be taken into account when any comparison is made between normal and abnormal pregnancies. It is emphasized that normality of a pregnancy can be decided only after the event.

3. It is confirmed that previous difficulty in pregnancy tends to be perpetuated.

4. Assessment of protein intake by a full history of diet in pregnancy and by a less detailed appraisal of nutrition before pregnancy (significant protein meals) showed protein lack to be present in those patients with complications which were more likely to be of nutritional origin.

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MCGANITY, W. J., CANNON, R. O., BRIDGEFORTH, E. B., MARTIN, P., DENSEN, P. M., NEWBILL, J. A., MCCLELLAN, G. S., CHRISTIE, A., PETERSEN, J. C., and DARBY, W. J. (1954), "The Vanderbilt Cooperative Study of Maternal and Infant Nutrition, VI, Relationship of Obstetric Performance to Nutrition", *Amer. J. Obstet. Gynec.*, 67: 501.

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Reviews.

Action of Radiation on Tissues: An Introduction to Radiotherapy. By A. Lacassagne and G. Gricouroff; translated by Clarence C. Lushbaugh, M.D., and Gretchen R. Riese, M.S.; 1958. 8½" x 5", pp. 208, with 17 illustrations. Price: $6.25.

This book could have been entitled quite appropriately "A History of Radiobiological Research". It covers, with surprising clarity and brevity, the development of modern conceptions in this subject from the period at the turn of the century immediately following the discovery of X rays and natural radioactivity.

A knowledge of radiophysiology and radiobiology is essential for the student in radiotherapy, and this little book, containing only 182 pages of subject matter, will fill a definite need. Each system, organ and tissue is surveyed systematically, and the bibliography at the conclusion of each chapter is extensive. Even so, a translators' bibliography is given containing additional references, mainly from North American sources.

From the standpoint of the practising radiotherapist the book will prove helpful, but it could have been even more so if a little further attention had been given to the recording of the levels and factors of radiation exposure and dosage. In the section on "functional lesions" (of the stomach) on page 48, dosage is not mentioned. It would be an anachronism to use the *r* in reports of early experimental work, as this unit first came into use toward the close of the third decade in this century. Few therapists of the present generation will recognize the H unit, and it seems unfortunate that this has been widely used without any correlation in terms of a modern unit except on page 153, where one reads "(25 to 40 H—10 erythema doses)".

The kilovoltage and significant factors are not given when dosage levels are quoted, so that the reader is often left wondering whether the authors refer to a quantity of radiation on the surface or to the average amount actually reaching the organ in question.

Chapter XIII provides an excellent account of the effects of irradiation on the nervous system, and radiotherapists would find extremely valuable a statement on the tolerance of cerebral tissue under treatment conditions with irradiation fractionated in daily exposures over a period of weeks. However, most of the dosages mentioned in this chapter appear to be in single exposures.

The translators of this volume are to be congratulated for a splendid achievement in an assignment which must have been exacting. It can be asserted that few readers would recognize that the subject matter was originally written in another language. This impression might be given by a sentence on page 8, which concludes: ". . . to kill the protozoa without they themselves being irradiated."

This volume is recommended to any reader interested in radiobiology.

Drugs of Choice: 1958-1959. Edited by Walter Modell, M.D.; 1958. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 10" x 6½", pp. 931. Price: £7 0s. 3d.

Choosing the best drug for the patient is nowadays a problem of no mean order. The clinician is bombarded with literature from the pharmaceutical houses and less frequently by visits from their representatives. From these sources he can rarely expect to get an unbiased opinion on the relative merits and disadvantages of a particular drug, and he must therefore be in a position to make up his mind independently.

This book attempts to provide information to help him in his choice, but it has the big disadvantage of being far too large and costly—containing, in fact, not far short of 1000 pages. The book is divided into some 35 chapters dealing with the choice of drugs for a variety of conditions, and each chapter is written by a specialist author. The quality of the chapters is therefore somewhat variable, but they all follow a general pattern. After an introduction, the clinical applications of the group of drugs are considered from a pharmacological standpoint, and then a comparison of the chief members of that particular class of drugs is made, the official names current in the United States being used. After some notes of their practical use, a list of selected references is given, and the chapter concludes with an index of the proprietary preparations available in the United States and their trade names.

The fact that this book is an American book limits its usefulness. In this country we usually employ British official names, and the prescribers' index at the end of each chapter is of restricted use here.

The range of drugs available nowadays is so great that much of their use becomes a specialist problem. Individual chapters of this book could be very useful to a specialist; but equally well he might never look at other sections. Again, such a reader would probably be as familiar as the author with the basis for the selection of appropriate therapeutic substances in his own field and therefore would gain rather less than one might expect.

For the general practitioner, a modern textbook on pharmacology, together with the latest edition of "Martindale", would probably provide a better source of information and certainly a much less expensive one, and at the present time when textbooks on pharmacology and therapeutics become out of date in a year or so this latter fact is one we can hardly afford to ignore.

The editor is to be congratulated on compiling a book of this magnitude, which undoubtedly will be of wide use in the United States.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Urology in Outline", by T. L. Chapman, Ch.M., F.R.C.S. (Eng.), F.R.F.P.S. (Glas.); 1959. Edinburgh and London: E. and S. Livingstone, Limited. 8½" x 6", pp. 184, with 138 illustrations. Price: 27s. 6d. (English).

A book for those who study or practise general medicine or surgery, rather than for the specialist.

"The Care of the Geriatric Patient", edited by E. V. Cowdry, Ph.D., Sc.D. (Hon.); 1958. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical), Limited. 7½" x 4½", pp. 440. Price: £4 8s.

Twenty-two experienced contributors present "what is currently known about the practical, comprehensive care of geriatric patients".

"The Year Book of Obstetrics and Gynecology (1958-1959 Year Book Series)", edited by J. P. Greenhill, B.S., M.D., F.A.C.S., F.I.C.S. (Honorary); 1958. Chicago: The Year Book Publishers. Melbourne: W. Ramsay (Surgical), Limited. 7½" x 5", pp. 608, with 49 illustrations. Price: £4 2s. 6d.

One of the Practical Medicine Series of Year Books.

"Neoplastic Diseases at Various Sites." General Editor, D. W. Smithers, M.D., F.R.C.P., F.F.R.; Volume 3. "Tumours of the Bladder", edited by David M. Wallace, O.B.E., M.S., F.R.C.S.; 1959. Edinburgh and London: E. and S. Livingstone, Limited. 9½" x 6½", pp. 368, with 202 illustrations and 25 tables. Price: 60s. (English).

Includes an analysis of all the relevant material registered through the Joint Urological Clinic serving the Royal Marsden, St. Peter's, St. Paul's and St. Philip's Hospitals, London.

"Mental Disorders", by W. S. Dawson; Fifth Edition; 1958. Edinburgh and London: E. and S. Livingstone, Limited. 7½" x 5", pp. 68. Price: 2s. 6d. (English).

One of the Catechism Series.

"Practical Blood Grouping", by F. Stratton, M.D., D.Sc., D.P.H., and P. H. Renton, M.D., B.Sc.; 1958. Oxford: Blackwell Scientific Publications. 8½" x 5½", pp. 356, with many illustrations. Price: 42s. (English).

The authors are director and deputy director respectively of the Blood Transfusion Service, Manchester.

"Epilepsy Handbook", by Frederic A. Gibbs, M.D., and Frederick W. Stamps, M.D.; 1958. Oxford: Blackwell Scientific Publications. 8½" x 5½", pp. 114, with illustrations. Price: 36s. (English).

Intended to be "a compact, practical compendium of useful knowledge about epilepsy", based on an analysis of many thousands of cases.

"The Phantom Limb", by Hamilton Johnston; 1958. London: Victor Gollancz, Limited. 7" x 4½", pp. 256. Price: 18s. 9d.

A novel "about a doctor's life and loves".

The Medical Journal of Australia

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MEDICAL REGISTRATION IN AUSTRALIA.[1]

THE sovereign character of the six Australian States is something that most people wish to see preserved, but there is considerable disagreement about which powers should, for the sake of the common weal, be handed over to the Commonwealth Government. Most of the obvious ones have long since been handed over, but one wonders just what valid arguments there are for leaving the registration of medical practitioners in the hands of the States. The standard of medical education throughout Australia is uniform, and a graduate in medicine from any Australian university is academically qualified for registration in all States of Australia, needing only to satisfy the additional requirements of hospital resident experience and personal character. However, when it comes to the registration of medical practitioners from overseas, apart from those from countries (such as the United Kingdom) with which general reciprocity exists, life becomes thick with spice.

In New South Wales the *Medical Practitioners Act*, in the section relating to the registration of foreign doctors, requires that the applicant prove, to the satisfaction of the Medical Board, that (*a*) he has passed through a regular graded course of medical study of five or more years in a school of medicine in a foreign country, and (*b*) after proper examination he has received a degree or diploma certifying to his ability to practise medicine or surgery in such country. This is the basic qualification, to which there is a series of corollaries. If the Medical Board is satisfied that the applicant has "such special qualifications and such special experience in the practice of medicine or surgery or any branch thereof", it may recommend to the Minister of Health that the applicant be granted outright registration without examination or attendance at the University of Sydney. High standards are insisted upon, and this section is a difficult one to satisfy. If the applicant satisfies the basic requirements and is or was by law entitled to practise in the country in which his qualifications were obtained, the Board authorizes him to attend the lectures and pass the examinations of the fourth, fifth and final years in the Faculty of Medicine in the University of Sydney. Having done so, he is entitled to be registered, but is not awarded a degree. Another part of the Act, section 21A, relates to regional posts. It provides that applicants for a licence to practise in some part of the State in which the Governor is satisfied that the residents are not adequately provided for in respect of medical and/or surgical services, must again satisfy the basic requirements. The Board then grants to the most suitable applicant a licence, renewable annually, to practise in the region. At the end of five years registration is granted for practice anywhere in the State. Section 21 (1), which is infrequently used, makes it possible for a person with foreign qualifications in medicine to gain registration after having held a certificate of registration for post-graduate teaching or for research work in medicine or surgery for three years under the sponsorship of any institution or organization interested in such subject. Each of these four sections still operates. In 1955 a new section, 21B, was added, under which persons with the basic qualifications mentioned were entitled to apply for a licence to practise, but they were required to have been resident or domiciled in New South Wales on January 1, 1954, and to pass an examination to prove that they possessed the requisite knowledge and skill for the efficient practice of medicine and surgery, according to the standards enforced at the University of Sydney. Having satisfied these requirements, the applicants would be licensed to practise in any State hospital, mental hospital and public hospital. The licences are renewable annually, and the holders will become entitled to registration at the end of five years. In 1957 further amendments to the Act were made, but they apply only to persons with the usual basic qualifications who were resident or domiciled in New South Wales on June 30, 1958. Among these further amendments, section 21C provides that applicants may be granted licences to practise under supervision in similar places to those mentioned in section 21B, but they are required to pass a test as to their knowledge and skill to practise as a medical practitioner at the end of twelve months. Having done so, they may continue under licence in the same places for a term of two to four years (five years in all), or they may seek the Minister's approval to work for a further period of four years as an assistant to a registered person. Section 17 (2A) is essentially the same as the section quoted earlier relating to such special qualifications and such special experience as qualifies for registration forthwith, but the important distinction is made that the applicant must have resided or been domiciled in the State on June 30, 1958, and the Board must be satisfied that the applicant has "qualifications" and "experience" in the practice of medicine or surgery, which will enable it to make a recommendation to the Minister that immediate registration be granted; the word "special" is not used in this new section. In section 17 (2B) the basic requirements still apply, but residence or domicile in New South Wales is not required; according to this section any person may be registered who has been employed as, and has been practising as, a medical practitioner in the employment of the Commonwealth of Australia in a territory of, or under the authority of, the Commonwealth (for example, New Guinea) for a period or periods aggregating five years or more, provided that such employment commenced, or was completed, before December 31, 1956.

Two types of registration are available in Victoria: (i) registration as a legally qualified medical practitioner of Victoria and (ii) temporary registration. The second of these may be granted by the Medical Board of Victoria to

[1] The Editor expresses his appreciation to the executive officers of the several registration boards for supplying the factual details about registration included in this article.

any person who is not registrable as a legally qualified medical practitioner, but who desires to come to Victoria in some capacity connected with teaching, research or post-graduate study. Applicants must be sponsored by the governing body of a teaching or research institute, and practice under certificates of temporary registration is limited to the service of the teaching or research institute. Registration of this kind is for two years and may be renewed for one further year only. Registration as a legally qualified medical practitioner, which means registration to practise in any field, may be granted to persons who have received a degree or diploma certifying to their ability to practise medicine or surgery from recognized medical schools or universities in the Australian States, New Zealand, the Colony of Singapore, the Federated States of Malaya, Pakistan, South Africa, Malta, Great Britain and Ireland, India (first schedule qualifications) and Hong Kong, provided that they obtained their degree or diploma after completing a regular course of medical and surgical study of at least five years' duration in the State or country in which such degree or diploma was obtained. Persons who hold medical degrees or diplomas of countries other than those listed may be registered as legally qualified medical practitioners in three ways: (i) by completing the final three years of the medical course of an Australian university and obtaining the degree of Bachelor of Medicine and Bachelor of Surgery at that university, or (ii) by satisfying the Medical Board of Victoria that they possess medical and surgical knowledge, experience and skill which, in the opinion of the Board, are of international standing, or are such as to have special value to the people of Victoria, or (iii) by satisfying the Foreign Practitioners' Qualification Committee that they are fit and proper persons to be registered as legally qualified medical practitioners. Legislation providing the machinery for the last form of registration provides that no application shall be considered by the committee unless the applicant has been resident in Victoria for three years. The legislation will remain in force until December 31, 1960. The Medical Board regards a good knowledge of the English language as essential, and applicants may be required to undertake a test in that subject, with particular emphasis on English medical terms.

In South Australia, it is the policy of the Medical Board, in considering applications for registration from medical practitioners with overseas qualifications, to recognize only those qualifications approved of and registrable by the General Medical Council of Great Britain.

In Queensland there is no difficulty of registration for applicants qualified in Australia, New Zealand, Great Britain or Northern Ireland, the only extra requirement being a period of experience, either as a resident medical officer in an approved hospital, or as a medical practitioner for at least three years in a State or country outside Queensland. Other persons holding medical qualifications obtained elsewhere are required to undergo examination before qualifying for registration. Their degree, diploma or certificate must be equal to, or higher than, the degree in medicine issued after due examination by the University of Queensland, must be approved by the Medical Board, and must be recognized by the Governor in Council by Order in Council published in the *Queensland Government Gazette* as qualifying the applicant to practise medicine in the country in question. The applicant must also have had experience of the same type as that required from the other group. Having satisfied these requirements, the applicant is permitted to undergo an examination conducted by the professors of medicine and surgery and obstetrics in the University of Queensland. The Board may then grant limited or full registration. Limited registration is granted where the experience of the applicant subsequent to graduation is not satisfactory, or where resident medical officer service subsequent to examination by the professors is a condition contained in the certificate given by them to the Board; full registration is granted at the end of the prescribed period of limited registration if service has been satisfactory. Otherwise full registration is granted.

For registration in Western Australia, an applicant must have a qualification granted by a recognized university or college in the United Kingdom, Eire, Malta, South Africa, Pakistan, Bombay, Ceylon, Singapore, Hong Kong, Manitoba, New Zealand or Australia, and the qualification must have been gained at the completion of a course of study of not less than five years, any three of which must be completed in one university or college. The applicant must satisfy the Board that he is a person of good fame and character and must be able to identify himself satisfactorily. Under legislation which came into force in Western Australia on January 1, 1959, acceptable qualifications are those of Australia and New Zealand and those registrable in Great Britain under what is generally known as the Home List. It is also required that an applicant be granted only temporary registration unless or until he has completed twelve months' service as a resident medical officer. He may then be granted general registration.

In Tasmania registration is given only to those applicants who are registrable by the General Medical Council of Great Britain and who are British subjects. However, there is legislative provision for a doctor with foreign qualifications to undergo twelve months' training as a resident medical officer in a hospital. After this he presents himself for examination, the standard of which is that of the final examinations in the medical schools of Australia. At the end of three years' service he is granted registration with the right to practise anywhere in Tasmania. The number so registered is limited to two *per annum*.

In the Australian Capital Territory an applicant for registration must be of good fame and character, and must be registered or possess a qualification entitling him to be registered under the *Medical Acts* of the Parliament of the United Kingdom, and his testimonial, diploma, licence or certificate must have been after examination duly obtained by him from a university, college or other body recognized in the country to which the university, college or other body belongs. During the currency of this certificate he must not have been removed from the register of any country including the register of the United Kingdom. He must have passed through a regular course of medical and surgical study of not less than five years' duration in a country being part of the Queen's dominions, or in a country (not being part of the Queen's dominions) in which registered legally qualified medical practitioners of any State or Territory of the Commonwealth are without further examination entitled to practise their profession

either on registration or otherwise. A proviso in the ordinance prohibits registration by the Board of any person holding a qualification entitling him to practise in a country other than any of the Queen's dominions unless it appears to the Board that registered legally qualified medical practitioners of any State or Territory of the Commonwealth are by virtue of being so registered entitled to practise their profession in such country either on registration or otherwise. Any medical practitioner from overseas must prove to the satisfaction of the Board that he has passed through a five-year regular course of study in medicine and surgery.

These various requirements have been set out in detail, partly to make them available to our readers, and partly to indicate the similarity of the requirements in most States, even though they are expressed in a variety of ways. There are, of course, special provisions of major importance in some States, especially New South Wales. It is difficult to see the sense of having such diversity, either major or minor, of requirements and regulations. During the past year or so the subject has been under discussion by the Federal Council. The matter was first brought up in the form of a suggestion from the Western Australian Branch of the B.M.A. that steps should be taken to make medical registration transferable from State to State within Australia. It was quickly realized that, with the existing differences between the States' requirements, this would not be practicable, although it offered no difficulty whatever in relation to Australian graduates. The only hope seemed to lie in some form of uniform registration on a Commonwealth basis, and the Federal Council discussed the matter with the Commonwealth Minister for Health. The Minister in his reply said that, as an ideal in the growth of the Commonwealth as a nation and as a practical procedure in a well-established community, the adoption of uniform conditions for registration of medical practitioners had a great appeal, and there could be little argument against its desirability. He went on to say, however, that in the present stage of the Commonwealth's development there were a number of problems, such as the recognition of overseas qualifications and the need to provide medical care for persons in the outback, which influenced the various States in their approach to the main question. Each State was influenced by the degree of importance of the problem or problems in its own particular area, and the geographical size of the Australian continent alone was sufficient to create a large variation in the local importance of the problems referred to. The Minister considered that those factors would militate against any rapid or full attainment of the objective of the Federal Council. Subsequently the Western Australian Branch, which had brought forward the matter in the first place, recommended to the Federal Council that a serious attempt should be made to overcome difficulties at present associated with introducing Australia-wide registration. This seems to be an eminently sensible suggestion. The difficulties mentioned by the Minister would no doubt be brought forward by individual States, but we fail to see that they are of great consequence. With all respect to the Minister, there is little real difference between the over-all requirements of the individual States, and uniform standards of registration throughout Australia would surely be in the best interests of everybody.

Current Comment.

THE URINARY CATHETER.

THE dangers of catheterization of the bladder have recently been pointed out in a salutary fashion in an editorial article by Paul B. Beeson.[1] As he states, the procedure is generally regarded as comparatively harmless, it is used as a routine by many practitioners to obtain a satisfactory sample of urine from female patients, and indwelling catheters are used frequently for the sake of convenience. Despite the widely held belief that with careful aseptic technique or chemoprophylaxis the risk of infection is negligible, "there is reason to argue that . . . infection of the bladder not infrequently results from catheterization, and that this can lead to pyelonephritis, a disease of unquestioned gravity". Opinion is divided concerning the pathway by which bacteria reach the kidneys; but Beeson points out that exact knowledge on this point is not essential to his present discussion, which sets out to decide how common is the incidence of pyelonephritis after catheterization. Bacteria may be introduced into the bladder despite the most careful attention to asepsis and antisepsis, because the urethral channel may contain bacteria. Samples of urine obtained by direct aspiration through the bladder wall of 12 patients at laparotomy were found to be sterile; but four of the 12 samples obtained by catheterization at the end of the operation were found to be infected. Beeson asks how often cystitis follows simple catheterization. He points out that dysuria and pyuria may be frequently missed. Tharple reported that manifestations of cystitis appeared after four of 100 catheterizations on female patients in a hospital ward; Beeson remarks that asymptomatic bacteriuria may occur with greater frequency, since urine in the bladder is a good environment for bacterial growth. "What is the likelihood of bladder infection when an indwelling catheter is employed?", Beeson asks. Kass found in such cases that bacilluria appeared in 95% of patients in four days. Kass and Schneiderman showed that the bacteria reached the bladder by way of a sheath of exudate surrounding the catheter. Weyrauch and Bassett showed also that motile bacteria could ascend through the lumen of the catheter against the flow of urine.

Beeson points to certain clinical experiences supporting the view that the ascending pathway is of major importance in kidney infection. In the first place, acute non-obstructive pyelonephritis is a disease almost confined to females. Presumably this is because the female urethra is shorter and more liable to contamination by intestinal bacteria. Urinary infection is a grave complication in paralysis of the bladder. It is generally thought to be due to over-distension; but the truth is that the first sample obtained is nearly always free of bacteria, and it is only after vesical drainage has been established that infection occurs. The next important clinical observation is that pyelonephritis is more likely to occur as a complication of urethral obstruction than of ureteral obstruction. This again points to the influence of the catheter. Furthermore, it has been shown that resistant organisms are found far more frequently when the urine has become infected during treatment of a patient in hospital than when it was already present on the patient's admission to hospital. Cross infection in urological wards has been shown to be caused by transfer of organisms from one patient to another by the hands of attendants. When urinary infection occurs outside hospital the responsible organism is almost invariably the colon bacillus. When infection has been introduced by the use of the catheter or other instrument, *Proteus*, *Pseudomonas*, *Klebsiella* and cocci may be found. Indeed, when *Pseudomonas* or *Proteus* is obtained on culture, it can be confidently stated that the patient's bladder has been catheterized. Beeson cautions against the use of chemoprophylaxis, remarking that where an

[1] *Amer. J. Med.*, January, 1958.

indwelling catheter is in use, it does nothing but eradicate susceptible organisms and favour the establishment of an infection that is more difficult to treat.

The lessons Beeson would teach us are clear. At times the catheter is indispensable; but its use involves the risk of producing serious disease. It should not be employed to obtain a clean specimen for routine examination. Convenience of attending nurses and doctors is not acceptable as a reason.

HORMONES AND THE AGING PROCESS.

ALEX COMFORT[1] states that the early discoverers of hormones were fully convinced that they had in their hands the key to the prevention of senescence in man. Indeed, the birth of endocrinology can be taken to be June 1, 1889, when Brown Séquard reported, in Paris, the astonishing degree of rejuvenation he observed in himself following injections of a dubious preparation made from a suspension of dog testis. Unfortunately, writers such as Voronoff succeeded in casting an aura of quackery over the whole question of the relation of the sex hormones and aging, an aura which is still with us.

Aging is not a single over-all process. Various factors contribute various effects, which add up to the total which we observe as senility. Among these are, undoubtedly, changes in the output of various hormones. It is therefore reasonable to investigate the possibility of replacement therapy, not in order to turn back the aging process *in toto*, but to see whether some of its effects may be mitigated. Several recent publications have dealt with various aspects of this problem. First, with regard to senile and post-menopausal osteoporosis, Reifenstein[2] points out that there is something to be said for the preventive use of gonadal hormones as replacement therapy after the menopause, whether or not the patient has post-menopausal symptoms. He recommends the combined use of androgen and œstrogen therapy over long periods for treatment of osteoporosis. P. H. Heneman and S. Wallach[3] have shown that prolonged œstrogen therapy has a definite effect on the skeletal system. This was done by the ingeniously simple method of measuring loss of height before and during prolonged treatment. All their patients had lost height in the years preceding treatment, and none lost any further height during treatment continued over several years. More general effects of gonadal hormone treatment in old men and women were studied in a carefully controlled trial by Kountz and others.[4] They investigated the effects of a combination of androgen and œstrogen given by mouth and compared it with a placebo and an androgen-œstrogen-reserpine combination. They were able to show no significant improvement in response to a series of psychological tests, but there was no doubt that the group which received the hormones showed a general tonic effect with improved disposition and mental outlook. Unfortunately, this appeared to be a short-term effect only, and after some months there was deterioration with side effects such as nervousness, stomach troubles and dizziness in both sexes. The general anabolic effects of androgens are well known, and are made use of in many fields of medical treatment. That they have a beneficial effect on elderly underweight men, at least over a short period, has been shown by E. Woodford-Williams and D. Webster,[5] working in the Department of Geriatrics at Sunderland in England. These investigators were able to demonstrate a marked increase in lean body mass over a period of some weeks during treatment with the non-virilizing steroid norethandrolone ("Nilevar"). Their patients were elderly underweight men, who had failed to gain weight on an adequate diet.

Thus it would appear that hormones have a definite effect in alleviating some of the conditions that are troublesome in old age. But as treatment is required to be continued over long periods, one must be very careful in making sure that no unwelcome side effects will occur before embarking too enthusiastically on treatment of all and sundry. A good many years must pass before the final story is known, and until then caution is surely necessary. At least we know that hormones do something to the body, whereas the various multi-vitamin preparations now on the market can have no rejuvenating effect whatever in the presence of an adequate diet.

[1] "The Biology of Senescence", 1954, London, Routledge and Keegan Paul.

[2] In "Principles of Internal Medicine", edited by T. R. Harrison, 1958, New York, Toronto, London, McGraw-Hill Book Co. Inc.

[3] *A.M.A. Arch. intern. Med.*, 1957, 100: 715 (November).

[4] *J. Geront.*, 1958, 13: 389.

[5] *Brit. med. J.*, 1958, 2: 1447 (December 13).

POST-OPERATIVE PULMONARY COMPLICATIONS.

THE "post-operative chest" is a perennial problem which can never be abolished, for the simple reason that when patients are subjected to the trauma of major surgery, even under modern anæsthesia, they are in many cases made liable to subsequent pulmonary complications, and anæsthetists and surgeons must therefore always be concerned with means of preventing them. In fact, as surgery becomes more enterprising, so the problem becomes more exacting. For this reason we venture to draw attention to a paper by T. H. Noehren, J. E. Lasry and L. J. Legters[1] in which they discuss the use of intermittent positive pressure breathing in the prevention and management of post-operative pulmonary complications, with special reference to patients with underlying disease of the lungs for whom major abdominal surgery is indicated. These authors have used intermittent positive pressure breathing over a period of several years, and state that they regard it as a major contribution in the prevention and treatment of such complications. They hold that it improves pulmonary ventilation during the post-operative period, increases the efficiency of the "bronchial toilet", and controls the effects of underlying pulmonary disease. They refer to their apparatus as the "Pulmonary Ventilator", and it appears to be somewhat similar to the Bennet machine in use in some Australian hospitals for patients with post-operative pulmonary depression, barbiturate poisoning, and other conditions in which assisted respiration is called for.

With the apparatus used by Noehren and his colleagues the patient uses a mask, or more frequently a simple mouthpiece. When he starts to inhale, there is an increased flow of gas into his lungs at a relatively low pre-set pressure, usually 15 to 20 cm. of water. When the pressure in the pulmonary system reaches this level, the flow of gas is automatically shut off, and the patient exhales comfortably without resistance at room air pressure. No further action occurs till the patient initiates his next inspiration. An aerosol spray can be incorporated in the gas flow; this allows medication with any desired aerosol, which is stated to be helpful in loosening tenacious secretions after anæsthesia, and to be particularly advantageous for patients with chronic lung diseases such as emphysema, bronchitis, bronchiectasis and asthma. Noehrens and his colleagues prescribe 10 to 20 mechanically assisted respirations every hour, for the first 24 hours after operation, and thereafter every two to four hours, according to the condition of the patient. They state that one of the immediate consequences of these assisted respirations is to shift the position of secretions in the bronchial tree, thus initiating a cough reflex; this usually occurs within 15 minutes after treatment. The fear sometimes expressed that intermittent positive pressure breathing would impound bronchial secretions instead of loosening them has not been substantiated, and Noehrens and his colleagues state that, with the addition of detergents and bronchodilators in the aerosol, dramatic clearance of secretion is sometimes obtained. They use

[1] *Surgery*, 1958, 43: 658 (April).

air in preference to oxygen, as they consider that a patient who has been "washed out" with 100% oxygen after operation is a candidate for rapid atelectasis and pneumonia if much secretion is present; this is because oxygen is rapidly absorbed behind any occluding mucus, whereas nitrogen is much more slowly absorbed.

In general, Noehrens and his colleagues use intermittent positive pressure breathing, with aerosol, in the preoperative period to improve ventilation in altered lung tissues (as in emphysema), to improve the "bronchial toilet", especially in patients with excessive secretions (as in bronchiectasis), to provide medication as indicated for bronchospasm and pulmonary infection, to improve gas exchange in hypoxic patients, and finally to familiarize the patient with the apparatus, should he require to use it after operation. In the post-operative period they use it to provide adequate ventilation for the prevention of atelectasis, to facilitate the removal of bronchial secretions, and to provide medical therapy for bronchospasm, infection, hypoxia, and even mild degrees of bronchial obstruction.

INFLUENZA IN THE NORTHERN HEMISPHERE WINTER.

DURING the present winter in the Northern Hemisphere there has been no evidence so far of any major influenza epidemic, although influenza has been widespread, according to a report just issued by the World Health Organization. A moderate seasonal rise in the incidence of influenza-like diseases was reported in a number of countries; the presence of A2 (A/Asia)[1] virus was recorded in one area of the United Kingdom and in the U.S.S.R. In different parts of England and Wales a number of localized outbreaks of respiratory infection were reported at the end of January, but since then there has been a sharp rise in the number of notifications of pneumonia and deaths from influenza, and illness is widespread. Information received indicates that outbreaks of acute respiratory infection in schools and service units have been identified as due to influenza B. There have also been a few scattered cases with serologically positive findings for influenza A, having their onset in late December, and virus A similar to the Asian group has been notified in at least six centres. In Italy several outbreaks of influenza have been notified from many regions. A strain B related to "Bonn" has been isolated in the south of the country. In the period since the epidemic of 1957-1958, influenza morbidity in the U.S.S.R. has been of a sporadic character and at the level of non-epidemic years. However, there was a certain rise at the end of December in some southern districts. Strains of virus A2 have been isolated, but these appear somewhat different in antigenic structure from those circulating during the pandemic last year.

In Canada several outbreaks of acute respiratory infections have been notified. Local influenza epidemics have been notified in different parts of India. Investigations in all cases except one have shown A2 (Asian) strains to be responsible. The incidence of influenza-like illnesses rose sharply during the second week of January in Switzerland. In France, epidemics of a similar nature, localized at first (during the second half of January) have spread throughout the whole country. Outbreaks are mild and the cause of infection is still being studied; a B-type virus is present in Paris, and also in the west, centre and east of the country. In Denmark the early weeks of February have shown a marked rise in the incidence of an influenza-like disease among schoolchildren. The clinical disease is mild, and there is no spread of the disease among adults. Serological examinations at present show characteristics of type B influenza. In the Netherlands influenza B has spread considerably; it affects mostly children. Pneumonia is rare, but a few deaths due to staphylococcal pneumonia have been notified.

[1] The WHO Expert Committee on Virus Respiratory Diseases has designated as follows the three principal families of type A influenza virus: A includes all A viruses predominant from 1933 or earlier up to 1946; A1 or A prime represents strains predominant from 1946 up to the appearance of Asian influenza in 1957 (it may continue to occur in the near future); A2 is the new Asian virus and seems likely to be the dominant A type in the next few years. No recommendation has been made concerning the designation of influenza B viruses.

A CLASSIFICATION OF DOCTORS.

FOUR main groups of doctors emerge when we send out cards relating to personal entries in the "Medical Directory of Australia". A considerable number, for reasons best known to themselves, ignore the card; they leave us, we presume, to use our discretion. Others do not read the card carefully and either tell us what we do not want to know or fail to tell us what we do want to know; they leave us frustrated. Yet others follow the inexplicable and unnecessary medical tradition of writing illegibly; they leave us guessing and hoping for the best. The fourth group, fortunately a large group, do things in the right way; to them we are grateful. It is the intention of the Australasian Medical Publishing Company Limited to publish the Medical Directory every two years in future, and this makes the amount of work involved quite formidable. However, it is important that the Directory should be as accurate and useful as possible, and we ask for the cooperation of all concerned.

The current batch of cards which has been sent out from the Directory office bears a new request which has been misunderstood by many of the doctors who have already returned their cards. It relates to the entry in the Gazetteer. The Gazetteer is the list of doctors' names grouped according to their places of practice and/or residence. Apart from city practices (Macquarie Street, Collins Street, etc.), the Gazetteer is concerned only with suburbs or towns and not with other details of addresses. Many doctors who practise away from their place of residence or who are not in private practice prefer not to have their names listed in the Gazetteer, which is really intended to provide an indication of the doctors practising in a particular area. For this reason the latest card has asked everyone to state whether or not he wishes his name to appear in the Gazetteer and then to indicate under which city and/or suburb or town if any he wishes his name to be listed. The card provides for an affirmative answer to this request (with the necessary detail) or a negative answer. Many of those who have returned their cards have ignored this section altogether or have provided somewhat ambiguous information. It is asked that this section be filled in in every case, and we hope that this explanation will indicate exactly what is required.

One or two other points of current interest may be mentioned. It is not the practice to include membership of societies in individual entries, except when it carries with it some officially recognized status, such as Membership of the Royal College of Physicians. The Directory provides a list of the members of the various societies, and in general this is considered to be sufficient. Unauthorized contractions such as M.F.R. (Member of the Faculty of Radiologists) are not accepted. In particular, the Royal Australasian College of Surgeons has advised us that the only authorized abbreviation for the Fellowship of the College is F.R.A.C.S.; the addition of such entries as (Ophth.) is not authorized, and these will not be included in entries. The last point to which we would appreciate attention being paid is that of telephone numbers. In some cities the use of letters of the alphabet has been completely eliminated, and in some it is in the process of being eliminated. This change has taken place since the issue of the 1957 Directory, from which have been taken the printed entries pasted on the individual cards sent to doctors. Careful checking of the telephone number is therefore important in every case.

Abstracts from Medical Literature.

MEDICINE.

Cryptococcosis.

L. L. WILSON (*Aust. Ann. Med.*, November, 1958) reports nine cases of cryptococcis (torulosis) occurring in South Australia. Five of these occurred in 1957; only four other cases were recognized during the previous ten years. In four cases in this series the patient had a preceding respiratory infection followed by pulmonary cryptococcosis, and three of these developed central nervous system involvement. The series included one case each of an isolated pulmonary lesion, a cerebral granuloma and spinal cord involvement. No treatment proved effective; amphotericin B ("Fungizone") was unsuccessful in the two cases in which it was tried. Only one patient recovered, a farmer who had an isolated pulmonary lesion excised. The author states that as yet the isolation of torula cells from the cerebrospinal fluid is the only certain method of diagnosis; earlier diagnosis, perhaps by the development of immunological tests, is urgently required to enable drugs such as amphotericin B to be given a satisfactory trial. The author states that the cause of human infection is unknown, but must be related in some way to the resistance of the host, as well as to variations in the virulence of the fungus. One patient had a history of close contact with pigeons, and the significance of this observation is discussed.

Unilateral Renal Artery Obstruction.

R. BIRCHALL, H. M. BATSON AND C. B. MOORE (*Amer. Heart J.*, October, 1958) review a series of eight patients with severe arterial hypertension due to unilateral renal arterial obstruction. The authors state that this lesion can best be demonstrated by combination of a differential renal clearance test and aortography. Since both these are uncomfortable for the patient and potentially hazardous, the authors select the following patients as needing further study: (i) those with hypertension beginning before the age of 30 years; (ii) those with hypertension beginning after the age of 50 years; (iii) those with fixed arterial hypertension and an audible bruit over one or both femoral arteries; (iv) those with unexplained difference in size or function of two kidneys when examined by excretory urography; (v) those in whom one kidney appears to be non-functioning on an excretory urogram and apparently normal on a retrograde pyelogram; (vi) those with hypertension which has suddenly become more severe; (vii) those in whom the history, for reasons difficult to explain, seems to be at variance with what experience would normally lead one to expect. Aortography alone is reliable only when a definite lesion is demonstrable. This examination is capable of producing severe renal arteriolar spasm with over-all depression of renal function. Such impairment of function may persist for three days or longer. Differential renal clearance studies therefore should be performed before aortography and operation should be postponed for at least three days after such an examination. Differential renal clearance studies are capable of delineating the presence or absence of unilateral renal arterial obstruction.

Arterial Hypertension.

J. CIBERT (*Brux-méd.*, January 5, 1958) reports the results of nephrectomy in 42 cases in which hypertension was suspected to be due to various renal or renal tract lesions. He reports good results (disappearance of functional signs, return to a systolic pressure of 150 millimetres of mercury or less, and to a systolic pressure of 100 millimetres of mercury or less) in 60% of cases. The average period of follow-up was four and a half years. The younger the subjects, the better were the results; a good result was secured in five out of eight children, but in patients over 50 years of age only failure was recorded. Long established hypertension is an unfavourable factor, though good results were obtained in some cases in which hypertension had existed for 10 years, and in some cases in which retinal lesions were present. In one patient a relapse occurred 10 years after nephrectomy had been performed. The author contests the opinion that only kidneys with considerably reduced function should be removed, as he obtained good results in two cases in which good renal function was present in the removed kidney; in one of these the kidney removed presented only a discrete hypoplasia, and in the other a calyceal diverticulum.

Postprandial T-Wave Changes.

G. A. SEARS AND G. W. MANNING (*Amer. Heart J.*, October, 1958) reviewed 7500 routine electrocardiograms amongst candidates for the Royal Canadian Air Force Air-Crew. In this material they found 240 subjects with questionable *T*-wave changes. They found that in a number of susceptible, but otherwise healthy, subjects these changes could be induced by a carbohydrate meal or by the ingestion of iced water. The authors suggest that whenever questionable *T*-wave findings are present a repeat tracing should be taken in the fasting state. Their evidence supports the view that isolated postprandial *T*-wave changes are of no pathological significance.

Post-Operative Myocardial Infarction.

G. FERUGIO, S. BELLET AND H. STONE (*A.M.A. Arch. intern. Med.*, September, 1958) report on 35 patients who developed myocardial infarction after operation. This complication was particularly prevalent in the older age groups and was found to be responsible for 10% of all deaths following major operations in patients above the age of 60 years. Amongst the predisposing factors the authors discuss: (i) pre-existing coronary artery disease; (ii) polycythæmia; (iii) emotional disturbances; (iv) age over 60 years. The precipitating factors include: (*a*) hypotension and shock; (*b*) arrhythmias and bradycardia; (*c*) sensitivity to anæsthetic agents; (*d*) surgical trauma with increased thromboplastin activity. Discussing management, the authors mention the prophylactic use of anticoagulants in the predisposed group from the third to the tenth day post-operatively, and also speculate on the use of "Plasmin" to avoid thrombotic complications.

Heart Disease in Patients with Portal Cirrhosis.

J. H. LUNSETH, E. J. OLMSTEAD AND F. ABBOUD (*A.M.A. Arch. intern. Med.*, September, 1958) studied 108 patients dying with portal cirrhosis from the cardiovascular point of view. Fifty-two of these patients had associated serious heart disease. Twelve of these had otherwise unexplained cardiac hypertrophy with congestive heart failure, tachycardia, apical systolic murmurs and electrocardiographic abnormalities. The authors suggest that the cardiac hypertrophy in these cases was due to increased cardiac output associated with peripheral vasodilatation in the early stages of portal cirrhosis.

Dissecting Aneurysm of the Aorta.

A. E. HIRST, V. J. JOHNS AND S. W. KIME (*Medicine* (*Baltimore*), September, 1958) review 505 cases of dissecting aneurysm of the aorta. After a full review of the history they discuss the ætiology of the condition under the headings: (*a*) general; (*b*) predisposing causes (hypertension, medial degeneration); (*c*) exciting causes. Pathogenesis, pathology and clinical manifestations are fully discussed. Conservative medical treatment is mentioned as well as recent advances in surgical therapy.

Constriction of the Veins.

J. P. RADO *et alii* (*Brit. Heart J.*, July, 1958) have studied the part played by venous constriction in certain circulatory disorders. The venous pressure before and after the administration of sodium nitrite was measured in normal subjects, in persons with hypertension without heart failure and in patients with congestive heart failure (in the last this was done both before treatment and after optimal compensation had been achieved). It was found that in every phase of heart failure, in patients reaching optimal compensation and in hypertension without heart failure the venous pressure fell under the influence of the drug more than in the control subjects. The fall of venous pressure was not correlated with the fall of arterial pressure and was thought to be due to the suppression of venoconstriction from increased venomotor tone.

Salt Deficiency and Climatic Factors in Kwashiorkor.

C. PAQUE (*Presse méd.*, October 11, 1958) has studied the role of nutritional salt deficiency after weaning and of climatic factors in the production of malnutrition of kwashiorkor type at Rabat, Morocco. The influence of the subtropical heat of Rabat on these conditions was estimated by means of the bioclimatic indices of Thornthwaite. The effect of the climate appears to be a progressive salt depletion. In the infant

this is complicated by the fact that, after he is weaned from milk which has an adequate content of sodium chloride, he is customarily fed on a diet deficient in salt. This brings about metabolic disturbances (polydipsia, water sickness) predisposing to a protein deficiency. The effect of the progressive salt depletion of climatic origin on an infant already in a state of salt depletion may explain the occurrence of the most severe cases of malnutrition after periods of heat in Rabat (and Tunis), where dry, salt-depleting seasons alternate with humid seasons, and also the prevalence of malnutrition states in the tropical and subtropical zones. The combination of salt depletion with protein depletion produces the clinical picture of severe malnutrition—weakness and chronic extracellular dehydration of the trunk with œdema of the extremities due to protein lack. In the delayed type with dropsy, the condition resembles true water intoxication (polydipsia). It is possible that chronic sodium deficiency is a factor in certain cellular disorders of the internal organs, and in the malabsorption of protein noted by Platt.

Laryngeal Paralysis in Heart Disease.

H. H. STOCKER AND H. T. ENTERLINE (*Amer. Heart J.*, July, 1958) describe under the name of the "cardio-vocal syndrome" a case of paralysis of the left recurrent nerve, causing hoarseness, in a patient suffering from coronary occlusion. The hoarseness was an early symptom of cardiac decompensation and was at first the patient's chief complaint. At autopsy there was found to be thinning of the recurrent nerve within its sheath as it passed between the pulmonary artery and the aorta alongside the ligamentum arteriosum.

The Stevens-Johnson Syndrome.

D. W. FOERSTER AND L. V. SCOTT (*New Engl. J. Med.*, September 4, 1958) report the isolation of the virus of herpes simplex from the skin vesicles of the eruption in a patient suffering from erythema exudativum multiforme (the Stevens-Johnson syndrome). The virus was identified by the complement-fixation test and by the plaque method.

Dextromoramide.

G. BONDIN AND J. BARBIZET (*Presse méd.*, January 25, 1958) report their experience with dextromoramide ("Palfium", "R 875") in the treatment of neuralgia. They have found it remarkably efficacious in conditions amenable to the standard analgesics. In a series of patients with headaches due to meningeal conditions they have found it particularly beneficial, as also in the treatment of headaches after ventriculography. They state that they have obtained a reduction in pain in patients with migraine and with headaches due to raised intracranial tension, but consider that it should not be used in these conditions unless the appropriate causal therapy has failed to give adequate relief. Other conditions in which they have found it to give relief include polyradicular neuritis, the radicular neuralgias such as sciatica, and radicular neuralgias of neoplastic origin. The authors state that the effectiveness of "R 875" in the treatment of neuralgias of thalamic origin indicates that it acts in the inferior posterior nucleus of the thalamus, at the centre for the perception of pain. Its action lasts for four to six hours, and the authors have not observed the development of tolerance or any evidence of habit formation. Intravenous administration may lead to severe reactions and is considered dangerous. Reactions after oral administration are as a rule not serious. Dosage should be regulated according to the response of the patient, who should always be put to bed when treatment is begun; an initial dose of 5 mg. is recommended, and normal activity should not be resumed till the individual's tolerance of the drug has been established. Some patients may have to lie down for two hours after each dose.

Scintillating Scotoma.

P. W. MILES (*J. Amer. med. Ass.*, August 9, 1958) discusses scintillating scotoma. The visual symptoms are commonly associated as an aura with migraine, but scintillating scotoma also often occurs without headache or other symptoms. It begins with a homonymous blind spot just to right or left of fixation which expands in all directions as it moves peripherally some 25 degrees, lasting about 25 minutes. The leading edge is a scintillating fortification figure. During the first 10 minutes the patient cannot read. The attacks usually begin between the ages of 30 and 50 years and may continue definitely. It is familial and hereditary, and it does not stop in middle age, as migraine often does. Inciting causes which have been reported are fatigue, stress, emotional upset and allergy to milk. Attacks often follow high altitude flight. Anoxia may induce an attack. The author states that the cerebro-vascular origin of scintillating scotoma is well established, and considers that the cause is spasm of the calcarine artery in the calcarine fissure. The prognosis is good unless attacks commence in patients over 60 years of age, when arteriosclerosis is to be suspected.

Addiction to Dextromoramide.

F. MENDES, J. DOS SANTOS AND N. SOEIRO (*Presse méd.*, August 30, 1958) report what they believe to be the first eight cases of true addiction to "R 875" (dextromoramide), an analgesic. The indication for the exhibition of the drug in all cases was severe pain, frequently accompanied by disturbances of the psyche. On several occasions, the attending physician gave the drug in the belief that it did not produce habituation or addiction. In all cases cure of the addiction took some time and was accompanied by severe symptoms. The authors conclude that the drug "R 875" can produce craving and habituation resembling addiction. They believe that some mildly affected patients succeed in curing themselves, and that severely affected persons are referred to psychiatrists; this may be why no cases of addiction have as yet been reported. Habituation develops in the same way as that to morphine; but the doses appear to increase more rapidly, possibly because the drug can be freely purchased. Once a high dosage has been reached, subjects complain of vague generalized pain of rheumatic type, and a severe anxiety state develops. Weaning of the patient from the drug is accompanied by symptoms resembling those of addiction to morphine; however, the process is easier and results are obtained more rapidly, even when the patient remains ambulatory. A few patients are able to reduce the doses greatly under encouragement from their doctors. However, it seems that complete cure is not possible without medical intervention, and in most cases without psychiatric assistance.

Fibro-Elastosis of the Endocardium in an Adolescent.

C. SARROUY *et alii* (*Presse méd.*, November 12, 1958) report a case of subendocardial fibro-elastosis in an Algerian boy, aged 14 years, who died of afebrile asystole. Investigation of his history revealed a similar episode of heart failure five years before. Histological examination revealed no involvement of the myocardium. The inflammatory origin of the condition described by Sacrez, Fruhling and Adam in the mixed forms of "chronic fibro-elastic myoendocarditis" did not seem applicable in the present case of simple delayed fibro-elastic subendocarditis.

The Nephrotic Syndrome.

A. M. JOEKES, R. H. HEPTINSTALL AND K. A. PORTER (*Quart. J. Med.*, October, 1958) report the results of percutaneous renal biopsy performed on 20 patients with a nephrotic syndrome. In four cases biopsy was repeated after an interval of some months. On the basis of the histological appearance, the cases were separated into the following groups: type 2 nephritis, renal vein thrombosis, focal glomerulonephritis, benign nephrosclerosis, probable chronic toxic tubular damage, and cases with no apparent abnormalities. The authors found that it was not possible to predict the histological appearance on clinical grounds. Discussing the subsequent progress of these patients, the authors state that of the eight patients with type 2 nephritis and the two with renal vein thrombosis, none had shown a complete remission. One of the patients showing focal glomerulonephritis was thought on clinical grounds to have systemic lupus erythematosus. Of the remaining nine patients, four had shown a complete remission and a fifth was well except for a trace of proteinuria. The authors suggest that it is quite common to find a histological picture different from that usually recognized as associated with the nephrotic syndrome, and that such atypical histological appearances should not be labelled type 2 nephritis. They consider that renal biopsy is essential for assessment of the results of therapeutic measures in type 2 nephritis.

Sarcoidosis of the Spinal Cord.

A. MOLDOVER (*A.M.A. Arch. intern. Med.*, September, 1958) reports a case of sarcoidosis of the spinal cord with remission associated with cortisone therapy. The patient was a young man with widespread sarcoidosis confirmed by biopsy of a lymph node.

Public Health.

POLICE OFFENCES (AMENDMENT) ACT, 1908, AS AMENDED, OF NEW SOUTH WALES.

The Under Secretary, Chief Secretary's Department of New South Wales, asks that publicity be given to the following information relating to the abolition of permissible limits for certain narcotic drugs under the *Police Offences (Amendment) Act*, 1908, of New South Wales.

Statement.

Following a request made by the Commonwealth Government having regard to Australia's obligations under the terms of International Conventions in relation to narcotic drugs, and a special review of the matter undertaken by the State authorities, action is being taken to:

(i) Abolish permissible limits under the *Police Offences (Amendment) Act* of this State in relation to drugs included in Group I of the International Conventions on Narcotic Drugs with the exception of morphine, cocaine and ecgonine. (See explanatory note thereon.)

(ii) Control drugs included in Group II of the International Conventions, but to allow a permissible limit of up to one *per centum* in respect thereof.

The position is being dealt with by cancelling all previous relevant Proclamations under the *Police Offences (Amendment) Act* and issuing a new Proclamation covering all drugs concerned.

A copy of the full Proclamation is attached, and the appended Schedule sets out all drugs to which the Act shall apply by Proclamation. All the drugs as scheduled had previously been controlled with the exception of methyldihydromorphine, dipipanone, propoxyphene, morpheridine, racemoramide, dextromoramide, levomoramide, etoxeridine and trimeperidine. The control of these latter drugs had been pending, and action has been taken to include them in the new Proclamation.

It will be noted that no permissible limit is allowed in respect of the scheduled drugs with the exception of the six drugs shown at the bottom of the list, namely, codeine, ethylmorphine, pholcodine, dihydrocodeine, acetyldihydrocodeine and propoxyphene. These are all drugs in Group II of the International Conventions, and, as mentioned, a permissible limit of up to one *per centum* is laid down.

The Proclamation is being published in the *New South Wales Government Gazette*, February 6, 1959, but does not come into effect until August 3, 1959.

In addition to the drugs as shown in the Schedule, control as provided for in Section 18 (2a) of the *Police Offences (Amendment) Act* will still apply in respect of:

Morphine and its salts and any preparation, admixture, extract or other substance containing not less than one-fifth *per centum* of morphine.

Cocaine and ecgonine and their respective salts and any preparation, admixture, extract or other substance containing not less than one-tenth *per centum* of cocaine or ecgonine.

Opium and any preparation, admixture, extract or other substance containing opium.

There is also a complete ban on diamorphine (heroin).

Proclamation.

L.S.

K. W. Street.

By deputation from His Excellency the Governor.

I, Lieutenant-General Sir Eric Winslow Woodward, Governor of the State of New South Wales, with the advice of the Executive Council, do, by this my Proclamation, declare that Part VI of the Police Offences (Amendment) Act, 1908, as amended, shall apply to the drugs as set out in the appended Schedule in the same manner as it applies to the drugs mentioned in paragraph (a) of subsection (2) of section 18 of the said Act.

The following Proclamations are hereby repealed:

(a) Proclamation published in Government Gazette No. 139 of 19th September, 1930, relating to Barbituric Acid and two other drugs.

(b) Proclamation published in Government Gazette No. 175 of 11th October, 1935, relating to Barbituric Acid and two other drugs.

(c) Proclamation published in Government Gazette No. 21 of 27th February, 1948, relating to Pethidine.

(d) Proclamation published in Government Gazette No. 65 of 18th June, 1948, relating to Barbituric Acid and two other drugs.

(e) Proclamation published in Government Gazette No. 94 of 13th August, 1948, relating to Di-2-dimethyl-amino-4, 4-diphenyl-heptane-5-one (known as Amidone etc.) and one other drug.

(f) Proclamation published in Government Gazette No. 223 of 9th December, 1949, relating to Indian Hemp (Cannabis) and one other drug.

(g) Proclamation published in Government Gazette No. 190 of 15th December, 1950, relating to Alphaprodine and seven other drugs.

(h) Proclamation published in Government Gazette No. 83 of 18th May, 1951, relating to Amidone and nine other drugs.

(i) Proclamation published in Government Gazette No. 94 of 24th April, 1952, relating to Dromoran.

(j) Proclamation published in Government Gazette No. 109 of 5th June, 1953, relating to Methorphan.

(k) Proclamation published in Government Gazette No. 117 of 30th July, 1954, relating to Morphine-N-oxide and fourteen other drugs.

(l) Proclamation published in Government Gazette No. 65 of 8th June, 1956, relating to a-Acetylmethadol and nine other drugs.

(m) Proclamation published in Government Gazette No. 129 of 30th November, 1956, relating to Levorphan and three other drugs.

(n) Proclamation published in Government Gazette No. 81 of 26th July, 1957, relating to Diethylthiambutene and three other drugs.

(o) Proclamation published in Government Gazette No. 165 of 18th December, 1957, relating to d-2, 2-diphenyl-3-methyl-4-morpholino-butyryl-pyrrolidine.

(p) Proclamation published in Government Gazette No. 1 of 3rd January, 1958, relating to Alphameprodine and two other drugs.

I hereby order that this, my Proclamation, shall take effect on and from Monday, 3rd August, 1959.

Signed and sealed at Sydney, this 28th day of January, one thousand nine hundred and fifty-nine.

By His Excellency's Command,

C. A. Kelly.

GOD SAVE THE QUEEN!

Schedule.

Drugs to which Part VI of the Police Offences (Amendment) Act, 1908, as Amended, Shall Apply.

Paraldehyde and any preparation, admixture, extract or other substance containing Paraldehyde.

Indian Hemp (Cannabis), including any portion of the plants of the genus Cannabis from which the resins have not been extracted, and any resin, extract, tincture, preparation or admixture of such plants, but excluding seeds incapable of germination.

Oxycodone (dihydrohydroxycodeinone), also known as Eucodal and Proladone, its salts, and any preparation, admixture, extract or other substance containing Oxycodone.

Hydrocodone (dihydrocodeinone), also known as Codinone, Cotussate, Dicodid and Tuscodin, its salts and any preparation, admixture, extract or other substance containing Hydrocodone.

Hydromorphone (dihydromorphinone), also known as Dilaudid and Lucodan, its salts and any preparation, admixture, extract or other substance containing Hydromorphone.

Thebacon (acetyldihydrocodeinone or acetyldemethylodihydrothebaine), also known as Acedicon, its salts, and any preparation, admixture, extract or other substance containing Thebacon.

Dihydromorphine, also known as Paramorfan, its salts, and any preparation, admixture, extract or other substance containing Dihydromorphine.

Benzylmorphine, also known as Peronine, its salts, and any preparation, admixture, extract or other substance containing Benzylmorphine.

Methyldihydromorphine (6-methyldihydromorphine), its salts, and any preparation, admixture, extract or other substance containing Methyldihydromorphine.

Metopon (methyldihydromorphinone), its salts, and any preparation, admixture, extract or other substance containing Metopon.

Oxymorphone (dihydrohydroxymorphinone), also known as Numorphan, its salts, and any preparation, admixture, extract or other substance containing Oxymorphone.

Desomorphine (dihydrodesoxymorphine), also known as Permonid, its salts, and any preparation, admixture, extract or other substance containing Desomorphine.

Methyldesorphine (6-methyl-Δ'-desoxymorphine), also known as Methyldesomorphine, its salts, and any preparation, admixture, extract or other substance containing Methyldesorphine.

Morphine-n-oxide, also known as Genomorphine, its salts, and any preparation, admixture, extract or other substance containing Morphine-n-oxide.

Thebaine, its salts, and any preparation, admixture, extract or other substance containing Thebaine.

Pethidine (1-methyl-4-phenylpiperidine-4-carboxylic acid ethyl ester), also known as Demerol, Dolantin and Pethanal, its salts, and any preparation, admixture, extract or other substance containing Pethidine.

Properidine (1-methyl-4-phenylpiperidine-4-carboxylic acid isopropyl ester), also known as Gevelina and Spasmo-Dolisina, its salts, and any preparation, admixture, extract or other substance containing Properidine.

Esters of 1-methyl-4-phenylpiperidine-4-carboxylic acid, their salts, and any preparation, admixture, extract or other substance containing any ester of 1-methyl-4-phenylpiperidine-4-carboxylic acid.

Etoxeridine (1-[2-(2-hydroxyethoxy)-ethyl]-4-phenylpiperidine-4-carboxylic acid ethyl ester), its salts, and any preparation, admixture, extract or other substance containing Etoxeridine.

Anileridine (1-[2-(p-aminophenyl)-ethyl]-4-phenylpiperidine-4-carboxylic acid ethyl ester), its salts, and any preparation, admixture, extract or other substance containing Anileridine.

Morpheridine (1-(2-morpholinoethyl)-4-phenylpiperidine-4-carboxylic acid ethyl ester), also known as Morpholino-Ethylnorpethidine, its salts and any preparation, admixture, extract or other substance containing Morpheridine.

Hydroxypethidine (1-methyl-4-(3-hydroxyphenyl)-piperidine-4-carboxylic acid ethyl ester), also known as Bemidone, its salts, and any preparation, admixture, extract or other substance containing Hydroxypethidine.

Ketobemidone (4-(3-hydroxyphenyl)-1-methyl-4-piperidyl ethyl ketone or 1-methyl-4-metahydroxyphenyl-4-propionylpiperidine), also known as Cliradon, its salts, and any preparation, admixture, extract or other substance containing Ketobemidone.

Alphaprodine (α-1,3-dimethyl-4-phenyl-4-propionoxypiperidine), also known as Nisentil and Prisiliden, its salts, and any preparation, admixture, extract or other substance containing Alphaprodine.

Betaprodine (β-1,3-dimethyl-4-phenyl-4-propionoxypiperidine), its salts, and any preparation, admixture, extract or other substance containing Betaprodine.

Alphameprodine (α-1-methyl-3-ethyl-4-phenyl-4-propionoxypiperidine), its salts, and any preparation, admixture, extract or other substance containing Alphameprodine.

Betameprodine (β-1-methyl-3-ethyl-4-phenyl-4-propionoxypiperidine), its salts, and any preparation, admixture, extract or other substance containing Betameprodine.

Trimeperidine (1,2,5-trimethyl-4-phenyl-4-propionoxypiperidine), also known as Promedol, its salts, and any preparation, admixture, extract or other substance containing Trimeperidine.

Proheptazine (1,3-dimethyl-4-phenyl-4-propionoxyhexamethyleneimine), its salts, and any preparation, admixture, extract or other substance containing Proheptazine.

Methadone (4,4-diphenyl-6-dimethylaminoheptanone-3 or 6-dimethylamino-4,4-diphenyl-3-heptanone), also known as Adanon, Amidone and Synthanal, its salts, and any preparation, admixture, extract or other substance containing Methadone.

Isomethadone (4,4-diphenyl-5-methyl-6-dimethylaminohexanone-3 or 6-dimethylamino-5-methyl-4,4-diphenyl-3-hexanone), also known as Isoamidone, its salts, and any preparation, admixture, extract or other substance containing Isomethadone.

Dimepheptanol (4,4-diphenyl-6-dimethylaminoheptanol-3 or 6-dimethylamino-4,4-diphenyl-3-heptanol), also known as Methadol, its salts, and any preparation, admixture, extract or other substance containing Dimepheptanol.

Alphamethadol (α-6-dimethylamino-4,4-diphenyl-3-heptanol or α-4,4-diphenyl-6-dimethylaminoheptanol-3), its salts, and any preparation, admixture, extract or other substance containing Alphamethadol.

Betamethadol (β-4,4-diphenyl-6-dimethylamino-3-heptanol or β-6-dimethylamino-4,4-diphenyl-3-heptanol), its salts, and any preparation, admixture, extract or other substance containing Betamethadol.

Acetylmethadol (4,4-diphenyl-6-dimethylamino-3-acetoxyheptane or 6-dimethylamino-4,4-diphenyl-3-acetoxyheptane), also known as Methadyl Acetate, its salts, and any preparation, admixture, extract or other substance containing Acetylmethadol.

Alpha Acetylmethadol (α-6-dimethylamino-4,4-diphenyl-3-acetoxyheptane or α-4,4-diphenyl-6-dimethylamino-3-acetoxyheptane), its salts, and any preparation, admixture, extract or other substance containing Alpha Acetylmethadol.

Beta Acetylmethadol (β-6-dimethylamino-4,4-diphenyl-3-acetoxyheptane or β-4,4-diphenyl-6-dimethylamino-3-acetoxyheptane), its salts, and any preparation, admixture, extract or other substance containing Beta Acetylmethadol.

Dipipanone (4,4-diphenyl-6-piperidino-3-heptanone), also known as Pipadone, Piperidylamidone and Piperidylmethadone, its salts, and any preparation, admixture, extract or other substance containing Dipipanone.

Phenadoxone (4,4-diphenyl-6-morpholinoheptanone-3 or 6-morpholino-4,4-diphenyl-3-heptanone), also known as Heptalgin, its salts, and any preparation, admixture, extract or other substance containing Phenadoxone.

Normethadone (4,4-diphenyl-6-dimethylamino-3-hexanone or 1,1-diphenyl-1-dimethylaminoethyl-butanone-2), also known as Ticarda, its salts, and any preparation, admixture, extract or other substance containing Normethadone.

Dioxaphetyl Butyrate (4-morpholino-2,2-diphenyl ethyl butyrate or ethyl-2,2-diphenyl-4-morpholino-butyrate), also known as Amidalgon and Spasmoxale, its salts, and any preparation, admixture, extract or other substance containing Dioxaphetyl Butyrate.

Racemoramide (d,1-3-methyl-2,2-diphenyl-4-morpholinobutyrylpyrrolidine), its salts, and any preparation, admixture, extract or other substance containing Racemoramide.

Dextromoramide (d-3-methyl-2,2-diphenyl-4-morpholinobutyrylpyrrolidine), also known as Palfium, its salts, and any preparation, admixture, extract or other substance containing Dextromoramide.

Levomoramide (l-3-methyl-2,2-diphenyl-4-morpholinobutyrylpyrrolidine), its salts, and any preparation, admixture, extract or other substance containing Levomoramide.

Racemorphan (d,l-3-hydroxy-N-methylmorphinan), also known as Methorphinan, its salts, and any preparation, admixture, extract or other substance containing Racemorphan.

Levorphanol (l-3-hydroxy-N-methylmorphinan), also known as Dromoran and Levorphan, its salts, and any preparation, admixture, extract or other substance containing Levorphanol.

Phenomorphan (3-hydroxy-N-phenethylmorphinan), its salts, and any preparation, admixture, extract or other substance containing Phenomorphan.

Racemethorphan (d,l-3-methoxy-N-methylmorphinan), its salts, and any preparation, admixture, extract or other substance containing Racemethorphan.

Levomethorphan (l-3-methoxy-N-methylmorphinan), its salts, and any preparation, admixture, extract or other substance containing Levomethorphan.

Dimethylthiambutene (3-dimethylamino-1,1-di-(2'-thienyl)-1-butene), also known as Kobaton, Ohton, Shikiton and Takaton, its salts, and any preparation, admixture, extract or other substance containing Dimethylthiambutene.

Diethylthiambutene (3-diethylamino-1,1-di-(2'-thienyl)-1-butene), also known as Themalon, its salts, and any preparation, admixture, extract or other substance containing diethylthiambutene.

Ethylmethylthiambutene (3-ethylmethylamino-1,1-di-(2'-thienyl)-1-butene), its salts, and any preparation, admixture, extract or other substance containing Ethylmethylthiambutene.

Codeine (methylmorphine), its salts, and any preparation, admixture, extract or other substance containing not less than one per centum of Codeine.

Ethylmorphine, also known as Dionine, its salts, and any preparation, admixture, extract or other substance containing not less than one per centum of Ethylmorphine.

Pholcodine (β-4-morpholinylethylmorphine), its salts, and any preparation, admixture, extract or other substance containing not less than one per centum of Pholcodine.

Dihydrocodeine, also known as Paracodin, its salts, and any preparation, admixture, extract or other substance containing not less than one per centum of Dihydrocodeine.

Acetyldihydrocodeine, also known as Acetylcodone, its salts, and any preparation, admixture, extract or other substance containing not less than one per centum of Acetyldihydrocodeine.

Propoxyphene (4-dimethylamino-1,2-diphenyl-3-methyl-2-propionoxybutane), its salts, and any preparation, admixture, extract or other substance containing not less than one per centum of Propoxyphene.

British Medical Association.

OTO-LARYNGOLOGICAL SOCIETY OF AUSTRALIA, NEW SOUTH WALES SECTION.

THE New South Wales Section of the Oto-Laryngological Society of Australia (B.M.A.) will hold a clinical meeting in the Maitland Lecture Theatre, Sydney Hospital, on Thursday, April 2, 1959, at 8 p.m. All medical practitioners and senior medical students are invited to be present.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

ETHER AS AN ANÆSTHETIC.[1]

[From the *Australasian Medical Gazette*, March, 1894.]

OUR December issue contained amongst the original articles a very able résumé by Dr. Jefferis Turner of Brisbane, of recent investigations as to the physiological action of chloroform, from which he deduced the precautions to be taken to avoid disasters from its use as an anæsthetic. While such experimental investigations may serve to explain more satisfactorily how these disasters and narrow escapes are brought about, we fear that we cannot boast, as a practical result of them, that in the meantime the mortality attending chloroform inhalation has been lessened, for week after week we read in the medical journals the records of cases of "death under chloroform", frequently, too, administered for trifling operations: and Dr. J. W. Barrett, of Melbourne, has recently declared the death rate in Victoria from snakebite to be less than that from chloroform inhalation in Melbourne alone: indeed there are those who go so far as to say that, in cases where death has occurred, the administrator should stand upon his trial for malpraxis or manslaughter. While we do not endorse the views of such extremists, it certainly does appear to us strange that the medical profession hesitates to recommend the substitution of ether for chloroform as the anæsthetic for general use. Very seldom do we hear of "accidents" with ether: its purity can be easily ascertained by any competent analyst, whereas the lethal impurities of chloroform baffle analysis, and require for their detection the aid of the physiological chemist. In Australia the experience of those who use it most teaches us that very few patients are unsuitable subjects for its administration, for with a suitable mouth-piece it can be given to quite young children: and we believe that its after effects are neither so serious nor unpleasant as to justify the use of a drug which is so unsafe, even in skilled hands, as chloroform, simply because it is less unpleasant to take and possibly more pleasant to recover from. At the International Congress much was said in defence of chloroform: can this be an illustration of the proverb *qui s'excuse, s'accuse*?

[1] From the original in the Mitchell Library, Sydney.

Correspondence.

INFORMATION REQUIRED.

SIR: In reply to your correspondent, Dr. E. M. Thomas ("Information Required", MED. J. AUST., February 21, 1959), the following notes may be helpful to him.

"Meladinine" (Memphis) and "Oxsoralen" (Elder) are trade names for certain members of the group of naturally occurring furocoumarins which have long been known to possess photosensitizing properties. The best known of these substances, ammoidin (xanthotoxin), or 8-methoxypsoralen, has been the object of considerable recent work in the United States of America, where it has been assigned the generic name "methoxsalen".

It is used as a 1% paint, or in capsules of 10 mg., and is followed by exposure to natural sunlight or to ultra-violet light (2500 to 3600 Å) some two to four hours after dosage. The course extends over several months and the pigmentation produced may be permanent, although it is said that satisfactory cosmetic results are obtained in a small percentage of cases only.

Side reactions include nausea, abdominal discomfort and headache, it it is believed that methoxsalen is a liver poison, but no definite proof is forthcoming.

I trust these few notes may be useful to your correspondent, and should he like to amplify them, he will find an excellent relevant report in *The Journal of the American Medical Association* of August 23, 1958, at page 2077.

Other references of interest are given below.

Yours, etc.,

K. SEVERIN ALSTAD,
Medical Director.

Burroughs Wellcome & Co. (Australia) Ltd.,
Cressy Street,
Rosebery, N.S.W.
February 25, 1959.

References.

FAHMY, I. R., and AUB-SHADY, H. (1948), "Isolation and Properties of Ammoidin, Ammidin and Majudin, and Their Effect in Treatment of Leukodermia", *Quart. J. Pharm.*, 21: 499.

FITZPATRICK, T. B., IMBERR, J. D., and LARBY, D. (1958), "Effect of Methoxsalen on Liver Function", *J. Amer. med. Ass.*, 167: 1586-1589.

KANOF, M. B. (1955), "Melanin Formation in Vitiliginous Skin Under Influence of External Applications of 8-Methoxypsoralen", *J. invest. Derm.*, 24: 5.

LERNER, A. B., DENTON, C. R., and FITZPATRICK, T. B. (1953), "Clinical and Experimental Studies with 8-Methoxypsoralen in Vitiligo", *J. invest. Derm.*, 20: 299.

DOCTORS AND NURSES FOR TRAVANCORE, SOUTH INDIA.

SIR: Two Christian doctors—one with surgical experience—and two nurses are needed to open a new hospital at Travancore, South India, under the auspices of the Syrian Orthodox Church there. The hospital could open in April if the staff were available. Fifty beds, out-patient facilities, X-ray plant, etc., are arranged for—and large extensions are hoped for later. Application should be made before March 23, 1959, to the Reverend Abraham Thomas, Moore Theological College, Newtown, Sydney, N.S.W.

Yours, etc.,

J. A. SIMBAL.

Presbyterian Babies' Home,
19 Canterbury Road,
Camberwell,
Victoria.
February 26, 1959.

SIMPLE METHOD OF ARTIFICIAL RESPIRATION.

SIR: There is a good account of mouth-to-mouth artificial respiration in the novel "The Guardian Angel", written *circa* 1867 by Oliver Wendell Holmes, who, it is scarcely necessary to inform your readers, was professor of anatomy and physiology and for a time dean of the faculty of medicine in Harvard. A girl, Myrtle Hazard, is rescued by a youth,

Clement Lindsay, after she has been swept down rapids in a river:

> He placed his lips to hers, and filled her breast with the air from his own panting chest. Again and again he renewed these efforts, hoping, doubting, despairing . . . once more hoping, and at last, when he had almost ceased to hope, she gasped, she breathed, she moaned, and rolled her eyes wildly round her . . . she was born again into this mortal life.

Yours, etc.,

W. A. OSBORNE.

Kangaroo Ground,
Victoria,
February 26, 1959.

Post-Graduate Work.

SURGICAL SEMINAR AT ST. VINCENT'S HOSPITAL, SYDNEY.

A SURGICAL SEMINAR will be held at St. Vincent's Hospital, Sydney, on Monday, April 6, 1959, at 5.15 p.m., in the Students' Lecture Theatre, fifth floor. The speaker will be Mr. V. J. Kinsella, who will read a paper entitled "Remarks on Gastrectomy". All medical practitioners are invited to be present.

SEMINARS OF THE DEPARTMENT OF SURGERY, UNIVERSITY OF SYDNEY.

The Department of Surgery, University of Sydney, will conduct a series of surgical seminars in the Clinical Lecture Room, Alfred and Mary Roberts (A.M.R.) Ward, Royal Prince Alfred Hospital, Sydney, on Tuesdays at 4 p.m. The programme from March 3 to June 9 is as follows: March 3, "The Value of Cobalt Beam Therapy in Advanced Cancer", Dr. H. J. Ham; March 10, "Acute Cerebral Trauma", Mr. Douglas Miller, F.R.A.C.S.; March 17, "The Reinforced Choledochogram", Dr. J. Ryan; March 24, subject to be announced, Mr. William Gissane, F.R.C.S., Commonwealth Sims Travelling Professor, 1959; March 31, Cobalt Unit, "Carcinoma of the Testis", Dr. P. E. Coriette; April 7, "The Extracorporeal Circulation", Mr. Rowan Nicks; April 14, "The Plain X-Ray Film of the Abdomen", Dr. John Saxton; April 21, "Frozen Section", Dr. V. J. McGovern; April 28, "Carcinoma of Thyroid", staff of the Cobalt Beam Therapy Unit; May 5, "Hyperparathyroidism", Mr. N. R. Wyndham; May 12, "Super-Radical Surgery for Cancer", Mr. R. I. Mitchell; May 19, "Cerebral Angiography", Mr. R. A. Money; May 26, "Carcinoma of the Laryngo-Pharynx", staff of the Cobalt Beam Therapy Unit; June 2, "The Significance of a Lump in the Neck", Dr. J. J. Conley, Memorial Hospital, New York; June 9, "Ulcerative Colitis", Dr. J. Rankin.

Notes and News.

Family Doctor.

The first three issues of *Family Doctor* for 1959 are to hand, and, as usual, are full of interest. From such a wealth of enticing fare it is difficult to single out any one item for comment; but we were particularly taken with the editor's letter entitled "Very Unusual Aunts" in the January issue, "I Certainly Shall" by Anthony Edwards in the February issue (excellent oblique advice), and "Your Ideal Home" in the March issue. The standard of pictures in *Family Doctor* seems to improve with each issue. Each of the three mentioned here has some fascinating picture stories; but perhaps the most attractive photograph of all is the cover boy on the February number, intently concentrating on his reading from an upside-down book. There is something in this magazine for all the family.

Specification for Technical Malathion.

The Standards Association of Australia announces the issue for public review and comment of a draft Australian Specification for Technical Malathion (Document 422). This

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED FEBRUARY 7, 1959.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	..	2(1)	6(4)	..	..	..	..	..	8
Amoebiasis	..	1(1)	..	..	..	..	..	..	1
Ancylostomiasis	..	..	12	..	..	..	6	..	18
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1(1)	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhoea (Infantile)	3(1)	11(9)	7(4)	..	..	..	..	..	21
Diphtheria	1	..	..	1	..	..	..	..	2
Dysentery (Bacillary)	..	..	7(1)	1(1)	1(1)	..	1	..	10
Encephalitis	..	2(2)	..	..	..	..	..	..	2
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	1	..	..	..	..	..	..	1
Infective Hepatitis	63(24)	32(15)	19(2)	15(5)	3(1)	..	..	..	132
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	1	..	1
Leptospirosis	..	..	3	..	..	..	..	..	3
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	1	..	..	..	..	..	..	..	1
Ophthalmia	..	..	..	..	1	..	..	..	1
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	1(1)	..	..	..	..	..	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	..	..	..	..	..	..	..	..	..
Puerperal Fever	1	..	2	..	..	..	..	..	3
Rubella	..	35(30)	..	..	13(12)	..	..	..	48
Salmonella Infection	..	..	..	..	..	..	1	..	1
Scarlet Fever	5(3)	7(5)	2	..	1(1)	..	3	..	18
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	1	1	2
Trachoma	..	..	..	..	18(1)	..	18	..	36
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	15(9)	26(18)	22(11)	6(5)	10(7)	3(2)	2	1	85
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

draft is concerned with the basic material used in manufacturing preparations containing technical malatnion. Formulations of malathion are used extensively for fruit spraying and general horticultural use. The chemical and physical requirements of technical malathion are detailed, together with relevant methods of test. Copies of Documen' 422 may be obtained from the headquarters of the association, 157 Gloucester Street, Sydney, and from any branch office. Comment on the draft should be sent to these offices not later than May 31, 1959.

Notice.

THE CHILDREN'S MEDICAL RESEARCH FOUNDATION OF N.S.W.

The following is a list of donations to the Children's Medical Research Foundation of N.S.W. received from members of the medical profession in the period February 17 to 24, 1959.

Surgeon Lieutenant-Commander Brett, £3 3s.

Previously acknowledged: £7908 1s. 9d. Total received to date: £7911 4s. 9d.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

McCullough, Russell Hugh, M.B., B.S., 1952 (Univ. Sydney), Fitzwilliam Street, Port Kembla.

McDonald, Barry John, M.B., B.S., 1957 (Univ. Sydney), 202 Blaxland Road, Ryde.

Leber, Carl Frederick, M.B., B.S., 1956 (Univ. Sydney), c.o. 294 William Street, Kingsgrove.

Lynch, John Michael Joseph, M.B., B.S., 1957 (Univ. Sydney), 30 Johnson Street, Byron Bay.

Learoyd, Brian Meldrum, M.B., B.S., 1955 (Univ. Sydney), 76 Warragal Road, Turramurra.

Sutherland, Donald Fyfe, M.B., B.S., 1956 (Univ. Sydney), 81 Wingewarra Street, Dubbo.

Moser, Rudi, M.D., 1924 (Univ. Berlin) (registered in accordance with the provisions of Section 17 (2B) of the *Medical Practitioners Act*, 1938-1958), General Hospital, c.o. Boroko P.O., Port Moresby, Papua.

Colja, Michael, M.D., 1952 (Univ. Ljvbljana, Yugoslavia), Bogan Gate.

Grainger, Peter Francis, M.B., B.S., 1956 (Univ. Sydney), 23 Wilberforce Avenue, Rose Bay.

Teo, Philip Seng Kee, M.B., B.S., 1957 (Univ. Sydney), 212 Henry Lawson Drive, Picnic Point.

Hugh, Thomas Benedict, M.B., B.S., 1957 (Univ. Sydney), 349 Arden Street, Coogee.

Wallner, Darrell Peter, M.B., B.S., 1957 (Univ. Sydney), Flat 2, Quombi Court, Ocean Street, North Bondi.

The undermentioned has applied for election as a member of the Victorian Branch of the British Medical Association:

Chrapowicki, Sergiusz, M.B., B.S., 1923 (Univ. Kharkov), The Peter MacCallum Clinic, Melbourne.

Medical Appointments.

Dr. I. Atkinson, Dr. R. L. Llewellyn-Smith and Dr. K. J. Meagher have been appointed Medical Officers, Grade I, Mental Hygiene Branch, Department of Health, Victoria.

Dr. K. H. Bryant, Dr. B. W. Cook, Dr. A. Kessell and Dr. D. W. McIntosh have been appointed Medical Officers, Grade II, Mental Hygiene Branch, Department of Health, Victoria.

Deaths.

The following death has been announced:

Ingram.—Mary Allison Ingram, on February 20, 1959, at Black Rock, Victoria.

Diary for the Month.

March 14.—Western Australian Branch, B.M.A.: Annual General Meeting.
March 16.—Victorian Branch, B.M.A.: Finance Subcommittee.
March 17.—New South Wales Branch, B.M.A.: Council Quarterly.
March 19.—Victorian Branch, B.M.A.: Executive of Branch Council.
March 19.—New South Wales Branch, B.M.A.: Annual Meeting.
March 24.—New South Wales Branch, B.M.A.: Council (Election of Officers).
March 25.—Victorian Branch, B.M.A.: Branch Council.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales. Anti-Tuberculosis Association of New South Wales.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

All articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary is stated.

All communications should be addressed to the Editor, The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2-3.)

Members and subscribers are requested to notify the Manager, The Medical Journal of Australia, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this Journal. The management cannot accept any responsibility or recognise any claim arising out of non-receipt of journals unless such notification is received within one month.

Subscription Rates.—Medical students and others not receiving The Medical Journal of Australia in virtue of membership of the Branches of the British Medical Association in Australia can become subscribers to the Journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £5 *per annum* within Australia and the British Commonwealth of Nations, and £6 10s. *per annum* within America and foreign countries, payable in advance.